Follow the instructions in this chapter to set up your computer and learn the basics.

1 Getting Started

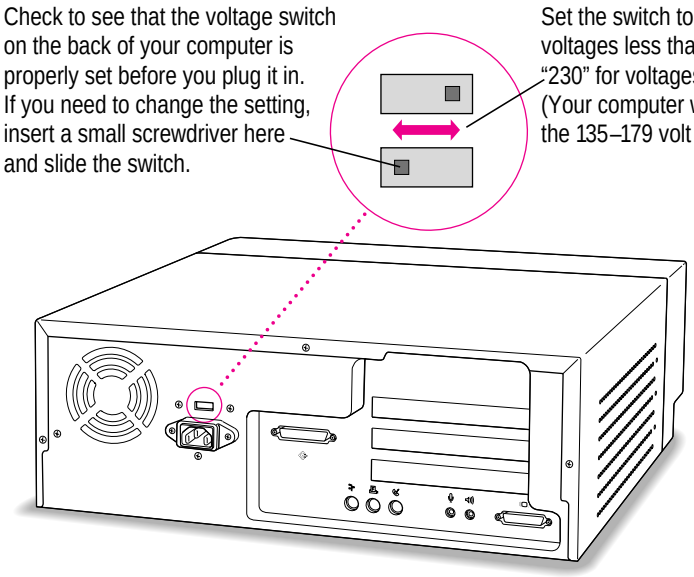
The illustration on the facing page shows all the equipment you will need to set up your computer and begin using it. Place your equipment on a sturdy, flat surface near a grounded wall outlet. Before following the setup instructions in this chapter, you may want to read "Arranging Your Office" in Appendix A (in the section on health-related information) for tips on adjusting your work furniture so that you're comfortable when using the computer.

If you used the setup poster: The poster included with your Power Macintosh computer was designed to help you start using your computer as quickly as possible. This chapter contains more detailed information than the poster. If you have already set up your computer using the poster, you may want to turn to the section "What's Next?" later in this chapter.

When you are ready to begin, follow these steps:

1 **Make sure the voltage switch on the back of the computer is set for the kind of voltage system to which you will be connecting.**

The voltage switch must be set correctly to avoid damaging your computer. If you don't know the voltage used in the country you're in, refer to the table "Voltages for Different Locations" later in this section.



WARNING Setting the correct voltage for your computer does not set the voltage for your monitor. To protect your monitor, be sure to use the appropriate adapter or voltage converter, if one is necessary.

Voltages for different locations

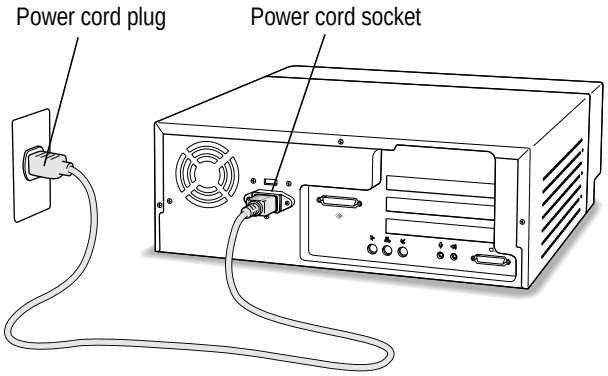
Country	Single voltage
Japan	100
South Korea	100/220
Jamaica, Taiwan	110
Peru	110/220
Brazil, Lebanon	110–220
Philippines	115
Bermuda, Canada, Puerto Rico, United States, Venezuela	120
Mexico	127
Saudi Arabia	127/220
Hong Kong	200
India, South Africa	220–250
Israel, Pakistan, Singapore	230
Australia, Kuwait, Malta, New Zealand, Northern Ireland, Papua New Guinea, Oman, Qatar, United Kingdom	240
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland	220–230
Bahrain, Chile, China (People's Republic), Czechoslovakia, Egypt, Greenland, Hungary, Iceland, Indonesia, Iran, Jordan, Liechtenstein, Nepal, Paraguay, Poland, Romania, Russia and the Commonwealth of Independent States (CIS), United Arab Emirates, Yemen, Yugoslavia	220

2 **Plug the socket end of the computer power cord into the recessed power cord socket (marked with the symbol ~) on the back of the computer.**

3 **Plug the other end of the power cord into a three-hole grounded outlet or power strip.**

Choose a power outlet to which you have easy access.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!



IMPORTANT Be sure that at least one end of the power cord is within easy reach so that you can unplug the computer when you need to.

If the computer starts up: If you hear a tone, the computer has started up and you need to turn it off before proceeding. Press the power button located on the front of the computer to turn it off. (Refer to Chapter 3, "Connecting Equipment and Expanding Your Computer," for an illustration showing the location of the power button on the front of the computer.)

Connecting a monitor

You can connect many types of monitors to your Macintosh. To connect a monitor from a manufacturer other than Apple, refer to the instructions that came with it.

Connecting the monitor power cord

Monitors have two cords to connect—a power cord and a monitor cable.

To connect the monitor power cord, follow these steps:

1 **Place the monitor where you will be using it.**

Keep these considerations in mind:

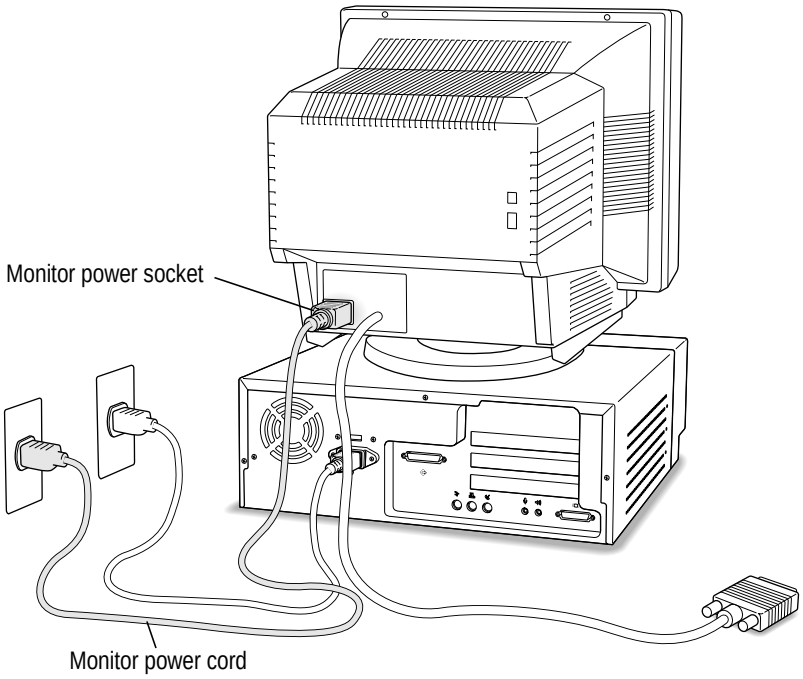
- The case of the computer is sturdy enough for you to place on top of it any monitor with a screen that is 17 inches or smaller.
- Allow at least 3 inches for air circulation around the sides of the computer and monitor.
- Make sure that the top of the screen is slightly below eye level when you're sitting at the keyboard.
- Position the monitor to minimize glare and reflections on the screen from overhead lights and windows.
- Consult "Arranging Your Office" in Appendix A for suggestions on positioning your computer equipment.

2 **Connect the monitor power cord to the monitor.**

On some monitors, the cord is already attached.

3 **Plug in the monitor power cord.**

Be sure to plug the power cord into a three-hole grounded outlet or power strip.



Connecting the monitor cable

After you plug in the monitor power cord, you connect the monitor cable to the computer's monitor port.

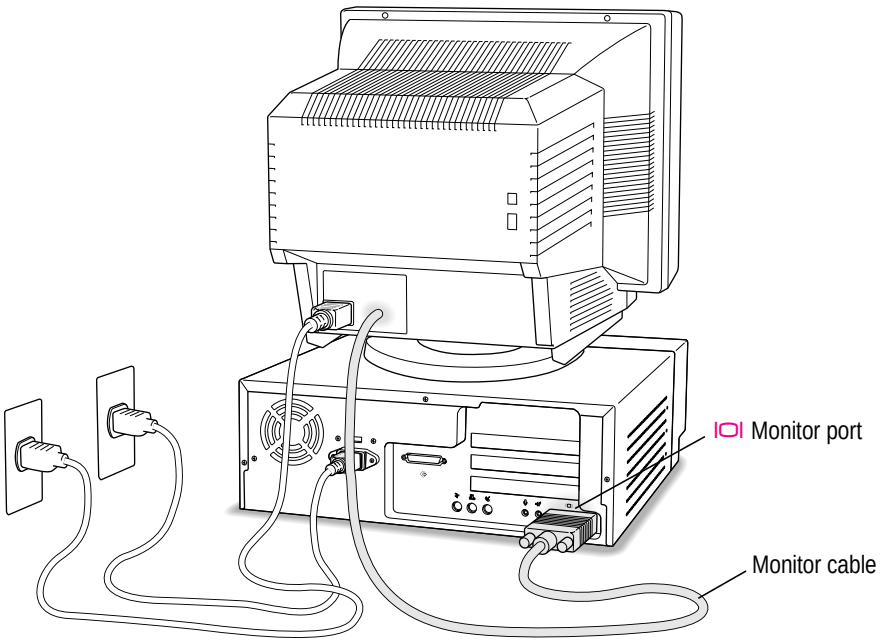
To connect the monitor cable, follow these steps:

1 **Attach the monitor cable to the monitor.**

On some monitors, the cable is already attached (as shown below).

2 **Attach the monitor cable to the monitor port on the back panel of the computer.**

The monitor port is marked with the |O| icon (symbol).

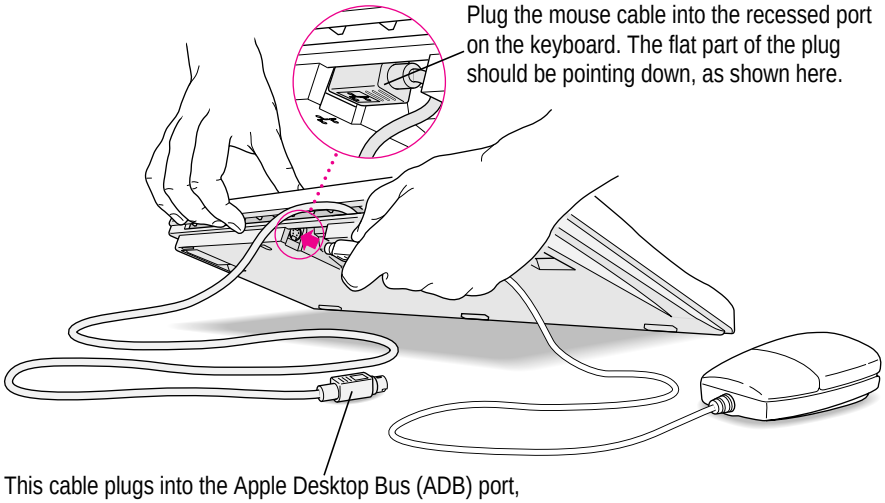


Connecting the mouse and keyboard

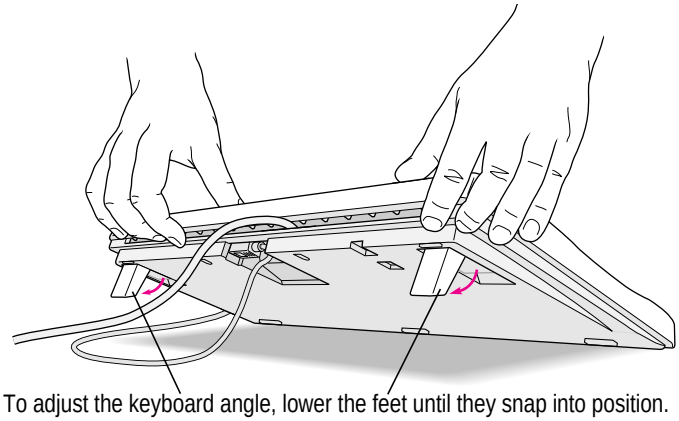
1 **Plug the mouse cable into the recessed port on the back of the keyboard.**

The plug and the port are marked with the ⌁ icon. The positions of the port and icon on your keyboard may be different from those pictured.

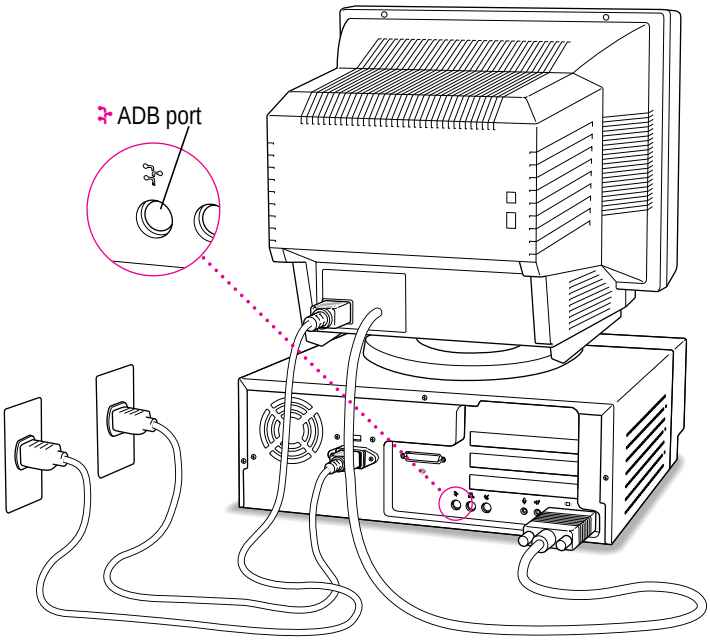
By the way: A port marked with the ⌁ icon is called an Apple Desktop Bus (ADB) port.



2 **If you want to adjust the keyboard angle, lower the feet of the keyboard.**



3 **Plug the keyboard cable into the port marked with the ⌁ icon on the back of the computer.**



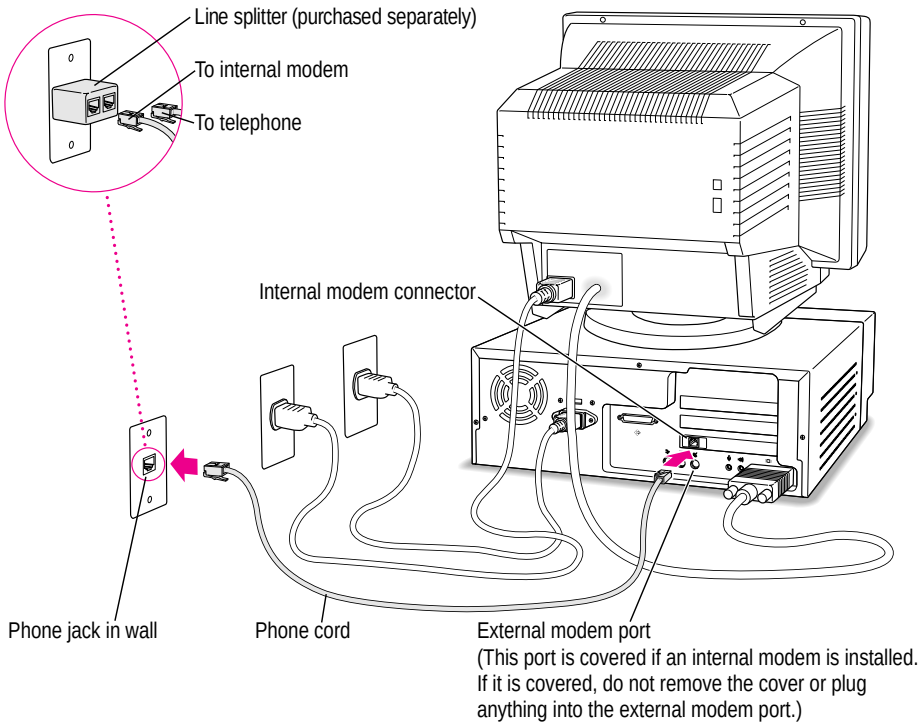
Some monitors have a port to which you can connect the keyboard or mouse. See the information that came with your monitor.

Connecting the modem

Your modem is an expansion card already installed in the communication slot of your computer. It enables your computer to send and receive faxes and telephone calls, to connect to the Internet, to access online services, and to communicate with other computer users. (You use the modem through the appropriate software already installed on your computer. See your modem documentation for information on how to use the modem and software.)

If you want to connect the modem now, follow the instructions in the next illustration.

IMPORTANT When connecting a modem, make sure you connect the modem to an analog phone line—the kind used typically in homes. (A digital phone line could damage the modem.) If you're connecting the modem at home, you probably have an analog phone line. Your modem manuals contain more information about using your modem.



You can use any standard phone cord to connect your internal modem connector to a phone jack. If you have only one phone jack, consider purchasing a line splitter at an electronics supply store. A line splitter lets you plug your phone and your modem into the same jack at the same time. Keep in mind that if your phone and your modem share a single phone line, you will not be able to use both pieces of equipment at the same time, even if they are attached to separate phone jacks. When you use your modem, outside callers get a busy signal and you cannot call out. When your phone is in use, you cannot use the modem. (By the way, you can keep your answering machine connected to your phone, even if your phone and modem share the same telephone line.)

IMPORTANT During lightning storms, disconnect your modem by unplugging its phone cord from the phone jack to help prevent accidental voltage overload.

Note: It is also possible to use an external modem with your computer. However, to use an external modem you must first remove the internal modem card following the instructions in "Installing a Communication Card" in the section "Installing an Expansion Card," in Chapter 10 of this manual. You will also need to remove the cover from the external modem port, so you can connect the external modem cable.

Connecting other equipment

If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

When you're ready to connect other equipment to your Macintosh, see the instructions in Chapter 3 and Chapter 4.

Turning the computer on for the first time

To turn the computer on for the first time, follow these steps:

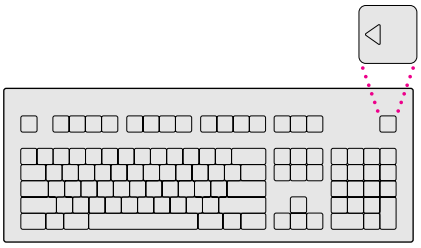
1 **Turn on your monitor.**

Note: You may not see the monitor power come on until you turn on the computer in the next step. Also, larger monitors can take several seconds to turn on if you have extra Dynamic Random Access Memory (DRAM) installed in your computer.

See the information that came with your monitor for the location of the power switch. On newer Apple monitors, the power switch is located on the front of the unit.

By the way: Depending on the type of monitor you have, you may only need to turn it on once. Some monitors turn off automatically when you shut down the computer, and turn on automatically when you start up the computer. Other monitors have to be turned on separately each time you turn on the computer.

2 **Press the Power key (marked with a triangle) on your keyboard.**



You hear a tone from the computer as it starts up. (If your computer does not start up, turn to the next section, “Problems Turning On Your Computer?”)

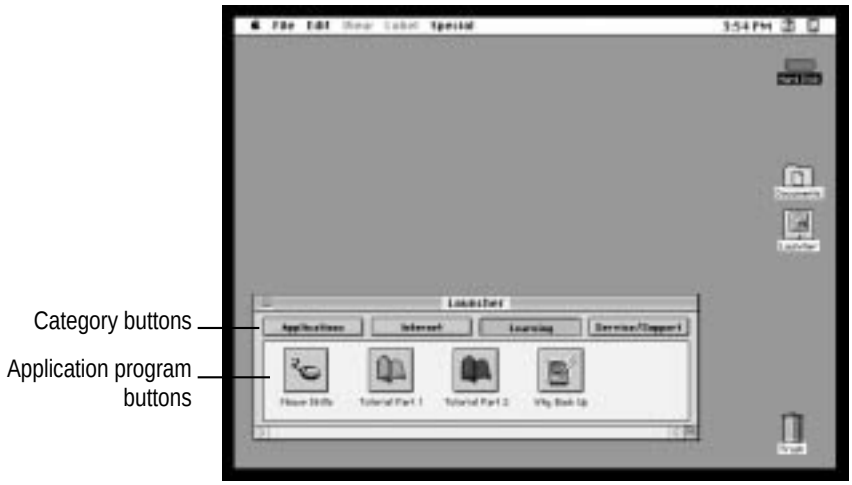
3 **Check to see what's on your screen.**

The Launcher appears on screen as a large window, which you can use to view the names of some of the application programs on your computer and to open the applications. These programs vary from model to model and range from instructional programs on how to use the computer to specialized programs for your home or business.

Note: If you see a blinking question mark or nothing at all, see the section "Problems Turning on Your Computer?"

The rectangular buttons below the striped bar at the top of the Launcher are labeled with the categories into which the programs have been divided. The square buttons in the colored area below the category buttons are used to open the individual programs. Each program's name appears below each square button.

When the category buttons first appear, one will have a different color than the others. This indicates that the button has been "pushed." Every time you push a category button, it will change color. In this way, you use the Launcher to move from category to category or to open a program with the single click of a button.



Your Launcher and its buttons may look different. (Most computer screens have a slight black border around them.)

4 **Now either go to the section “What’s Next?” later in this chapter or click the Launcher’s category buttons to see the software titles available.**

If you’re new to the Macintosh and need to learn the basic skills to use it, turn to the section “What’s Next?”

If you already know how to use the mouse, push the different category buttons to check out the software titles on your computer. (The buttons and colors in the lower area of the Launcher change each time you click a category button.) Then turn to the section “What’s Next?”

Depending on your level of expertise, you can take one of these tutorials to learn more about the basics of using your computer.

Problems turning on your computer?

If the screen is dark, check these items to see if you can identify the problem:

- Is the computer plugged into a power source? If it is plugged into a power strip, is the power strip turned on?
- Is the computer turned on? The power-on light in the power button should be on. If it isn't, press the power button (marked with the symbol ⏻) on the front of the computer.
- Are the keyboard and mouse cables connected correctly? (Don't disconnect the keyboard or mouse cable while the computer is on. You could damage your equipment.)
- Is the monitor power cord plugged in?
- Is the monitor turned on? (Check the power-on light on the front of the monitor.)
- Is the monitor cable—the one connected to the monitor port (🖵) on your computer—attached firmly to both the monitor and computer?
- Is the brightness control on the monitor adjusted correctly? (On most monitors, the brightness control is marked with the symbol ☼.)

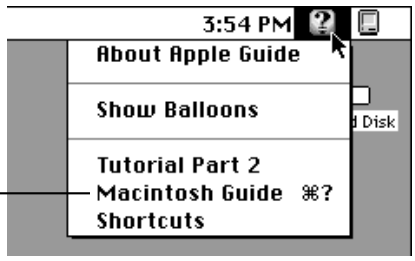
If you see a blinking question mark on the screen, turn to "Solutions to Common Problems With Your Computer" in Chapter 9.

What's next?

Congratulations! You've finished setting up your computer. Now continue with one of the following steps:

- If you are new to the Macintosh, see the next section, "Learning the Basics."
- If you are an experienced Macintosh user, turn to Chapter 2, "Getting Help," to learn about Macintosh Guide (or Mac OS Guide). Or select Macintosh Guide from the Guide menu (?) in the upper-right corner of your screen and explore it yourself.

What you can't find in this manual you can find in Macintosh Guide (or Mac OS Guide), your main source of information when working with your computer.



- If you want to connect other equipment, such as a printer, to your computer, see Chapter 3, "Connecting Equipment and Expanding Your Computer."
- If you want to install application software on your computer, see Chapter 4, "Installing and Using Application Programs." The chapter contains information on setting up your programs and managing memory. You need this information to set up any programs specifically designed for computers with PowerPC microprocessors.
- If you want to turn off your computer, see "Turning the Computer Off" later in this chapter.

IMPORTANT If you need to turn off your computer at any point, please see "Turning the Computer Off" later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

Before you begin working with your computer, be sure to read the important health and safety information in Appendix A.

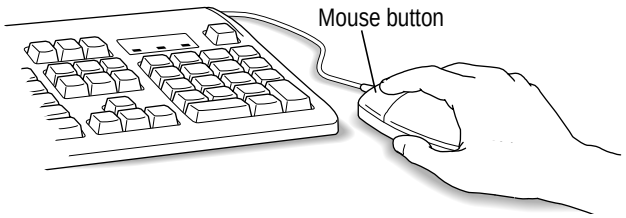
Learning the basics

Read this section if you haven't already gone through the Mouse Skills program or the tutorials. These programs teach you the basic skills you need to use your computer.

To start Mouse Skills or the tutorials, follow these steps:

1 **Slide your mouse along your mouse pad or desk.**

Hold the mouse as shown, with the cable pointing away from you. Don't press the mouse button (under your index finger). Notice that the arrow (↖) on the screen moves in the same direction that you move the mouse.



If the arrow doesn't move, make sure that the cables connecting the mouse and keyboard are secure and that your mouse is positioned as shown in the illustration.

2 **Move the mouse so that the arrow (↖) is over the picture of the particular tutorial you want to take.**

Your Launcher may look somewhat different.

If you don't see the Tutorial Part 1, Tutorial Part 2, or Mouse Skills pictures on your screen, put the arrow on the word "Learning" and click (press and release) the mouse button.

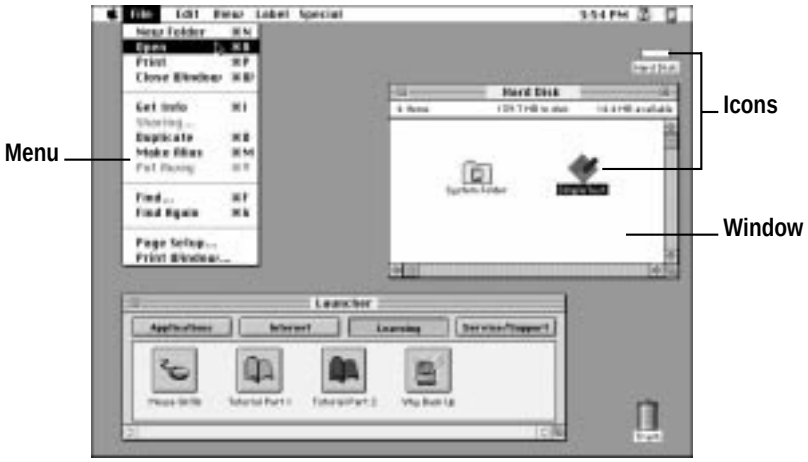
If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

3 **Click the mouse button on the picture of the tutorial you want to take.**

A window appears welcoming you to the tutorial. You can set this book aside for now and follow the instructions on the screen. When you have completed all the tutorials, return to this book.

Reviewing the basics

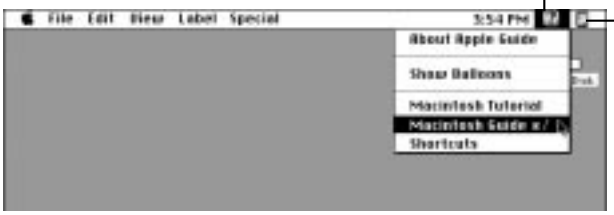
Use the following illustrations to review the elements on your screen with which you work on your computer.



Menus

The strip across the top of the screen is called the menu bar. The symbols and words in it represent “menus” (lists) of commands. To open a menu, place the pointer on the symbol or word for the menu and press the mouse button.

Guide menu
To find an answer to a question, look in the Guide (?) menu.



Application menu
You can have several applications open at once. To see which program is active or to switch from one program to another, use this menu.

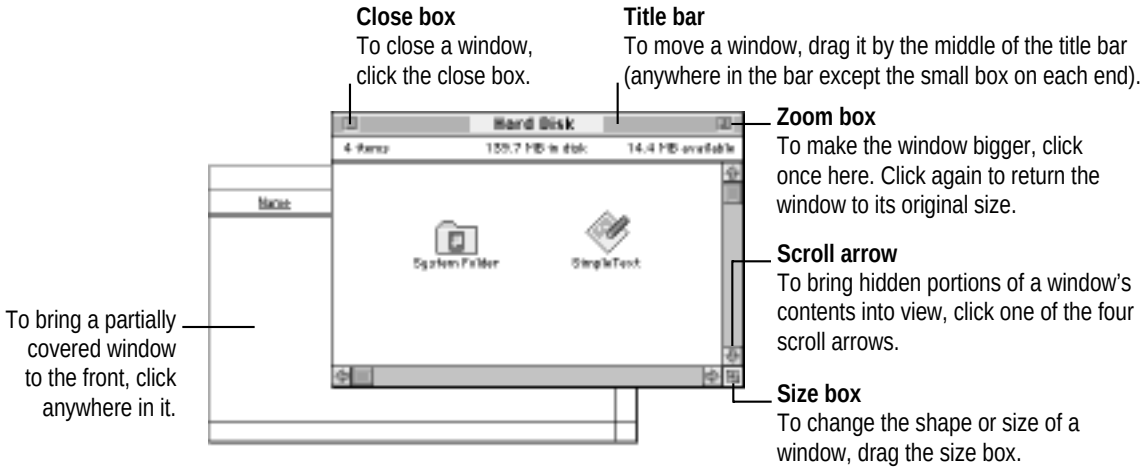
Icons

Icons are small pictures that represent disks, programs, documents, and folders. You can double-click any icon to open it and see what it contains.

Hard Disk	This icon represents your computer's internal hard disk.
Application	Icons like this one represent application programs, which you use to create documents and do other work.
Document	Icons like this one represent documents, which you can create and edit.
Folder	Icons like this represent folders. A folder contains other icons.
Trash	To throw away an item you no longer want, drag it to the Trash icon and choose Empty Trash from the Special menu.

Windows

Windows are boxes that display text, graphics, and icons. To change the shape or position of a window, or to close the window, use the elements shown here.



Turning the computer off

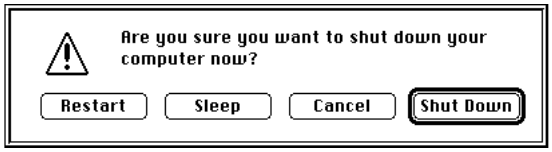
You can turn off the computer either with the Power key on the keyboard or by choosing the Shut Down command in the Special menu.

Using the Power key

To turn the computer off using the Power key on the keyboard, follow these instructions:

1. **If the computer is in sleep mode (the monitor is on but the screen is dark), press any key except Caps Lock to wake it.**
2. **Press and hold the Power key on the keyboard for about 2 seconds.**

   The following dialog box appears on the screen:



3. **Press the Return key on the keyboard (or click the Shut Down button in the dialog box).**

Choosing the Shut Down command

To turn off the computer by choosing Shut Down from the Special menu, follow these instructions:

1. **Move the tip of the arrow (↖) to the Special menu at the top of the screen.**
2. **With the tip of the arrow on the word “Special,” press and hold down the mouse button.**

3 **While holding down the mouse button, move the arrow down the list of choices until the words “Shut Down” are highlighted, then release the mouse button.**

If you can’t shut down your computer

If a problem with the computer prevents you from using the Power key on the keyboard or choosing Shut Down—for example, if the computer “freezes” so that the pointer does not respond to the mouse—you can turn off the computer by pressing the power button (⏻) on the front of the computer.

IMPORTANT You could lose unsaved work if you use the power button on the front of the computer to turn it off. Only use the power button when there is a problem that prevents the computer from being turned off with the Power key on the keyboard or the Shut Down command. To make sure your work is saved, use the Power key on the keyboard or the Shut Down command.

Turning the computer on

To turn on the computer after you’ve shut it down (using either the Power key on the keyboard or the Shut Down command):

Press the Power key (marked with a ◁) on the keyboard.

Your monitor may have to be turned on separately each time you turn on the computer. If you have trouble turning on your computer, see the section “Problems Turning On Your Computer?” earlier in this chapter.

Where to find answers

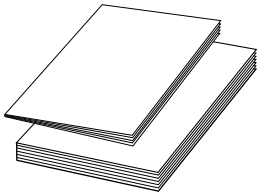
When you have questions about using your Macintosh, there are several places where you can look for answers.

In the Guide menu

The Guide menu (marked with the ? icon) is your main source of information about the Macintosh. To learn how to get several kinds of help from the Guide menu, see Chapter 2 in this book.

In this book

Use this book to help you set up your computer and learn about it, or to find solutions to problems with your equipment.



In other manuals

Some of the programs that came installed on your computer have separate manuals, either in the box with your computer or stored on your computer's hard disk. (You can find some electronic manuals in the Launcher.)

From Read Me files

The Apple Extras folder (in your System Folder) on your hard disk contains a SimpleText document, called About Apple Extras, with important information about some of the application programs included with your computer. Similar files called Read Me files can be found inside application folders and in the Documents folder on your desktop.

From Apple's customer support hotline

If you can't find an answer in any of the materials provided, call the customer support hotline. The phone number for the hotline is in the service and support information that came with your computer.

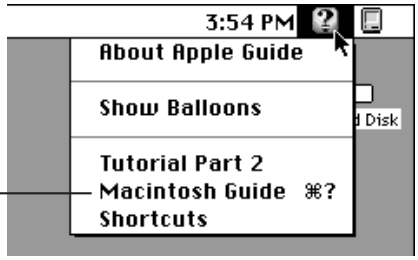
Note: If you have problems with an application program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to find a software publisher's phone number.

Use the instructions in this chapter to learn about the help available to you in the Guide menu.

2 Getting Help

The Guide menu contains online help and information and is your main source of information when working with your computer. The menu is identified by a question mark (?) in the upper-right corner of the screen.

The Guide menu includes an item called either Macintosh Guide or Mac OS Guide, depending on your version of system software. The term Macintosh Guide is used throughout this manual, even though the information pertains to both items.



You may see the item "Mac OS Guide" instead.

Getting answers to your questions

When you have a question while working with your computer, you can get the answer by choosing Macintosh Guide (or Mac OS Guide) from the Guide menu.

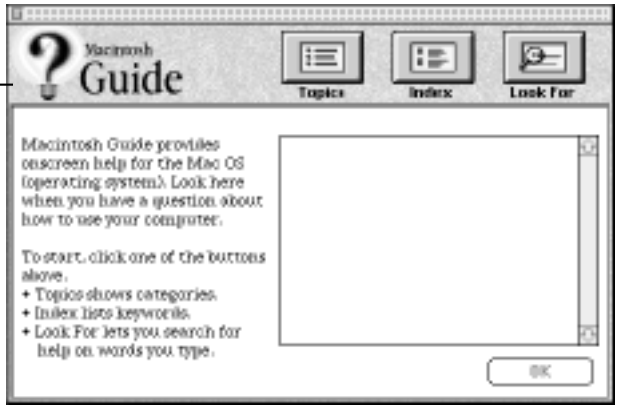
1 **Open the Application menu (in the upper-right corner of the screen) and choose Finder to make it the active application program.**

A checkmark appears beside the Finder command, indicating that the Finder is the active program.

2 **Open the Guide menu (marked with the ? icon) and choose Macintosh Guide.**

The Macintosh Guide window appears.

The version on your screen may say "Mac OS Guide."



Whenever you use Macintosh Guide, its window remains in front of other windows. If the window gets in your way, you can move it by dragging its title bar (the gray bar across the top of the window).

3 **Notice the three buttons at the top of the window: Topics, Index, and Look For.**

Macintosh Guide gives you three ways of finding information:

- **Topics** lets you choose from a list of general subjects; it is like the table of contents in a book.
- **Index** lets you choose from an alphabetical list of more specific subjects; it is like the index in a book.
- **Look For** lets you search for information related to a specific word or phrase that you type.

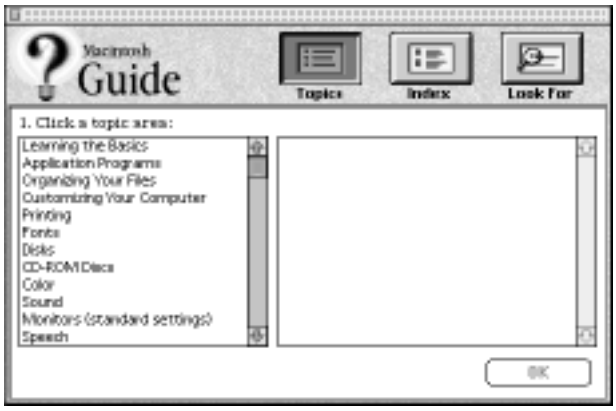
In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see "Tips for Using Macintosh Guide" later in this chapter.

Getting answers with the Topics button

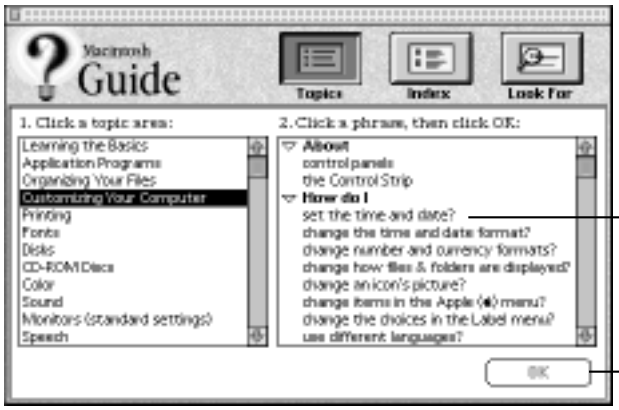
1 **In the Macintosh Guide window, click the Topics button.**

A list of general topic areas appears on the left side of the Macintosh Guide window. (Depending on the hardware and software you have, the list of topic areas may look different.)



2 **In the list of topics, click "Customizing Your Computer."**

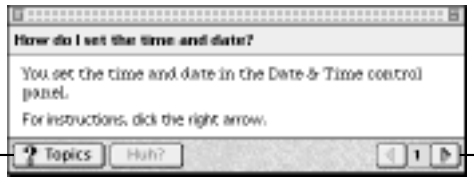
When you click any topic area, a list of related phrases and questions appears on the right side of the Macintosh Guide window.



3 **Click the question "How do I set the time and date?" and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, you click this button.



You click here to see the next step (if there is one).

4 **Read and follow the instructions in this window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

5 **When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.**

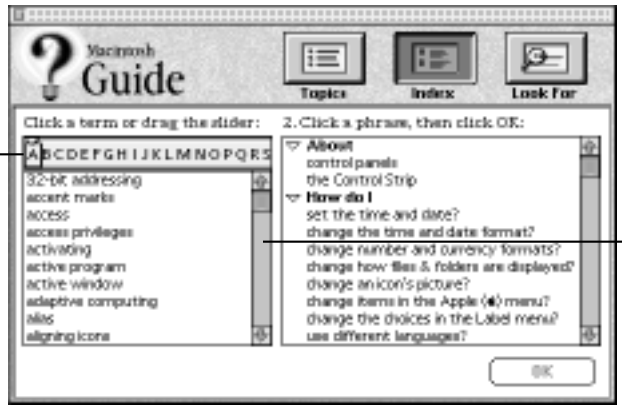
Now continue with the next section.

Getting answers with the Index button

1 **In the Macintosh Guide window, click the Index button.**

An alphabetical list of index terms appears on the left side of the window.

Slider



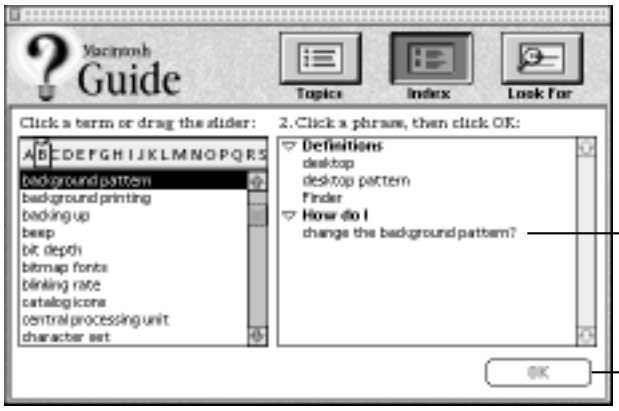
Scroll bar

2 **Scroll through the alphabetical list until the term “background pattern” is visible.**

You can scroll through the list either by dragging the slider to the letter *B* or by using the scroll bar at the right of the list.

3 **Click the term “background pattern” in the alphabetical list.**

When you click any index term, a list of related phrases and questions appears on the right side of the Macintosh Guide window.



To get instructions, you click a phrase or question…

…and then click OK.

4 **Click the question “How do I change the background pattern?” and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.

If you want to return to the main Macintosh Guide window, you click this button.

To see the next step (if there is one), you click here.

5 **Read and follow the instructions in the window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

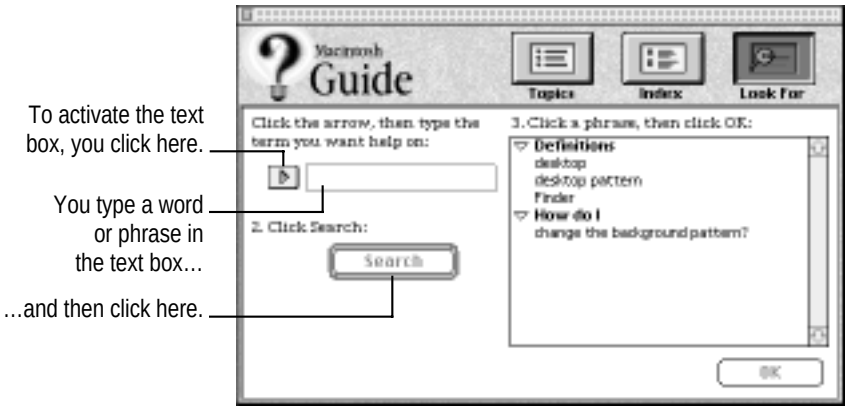
6 **When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.**

Now continue with the next section.

Getting answers with the Look For button

1 **In the Macintosh Guide window, click the Look For button.**

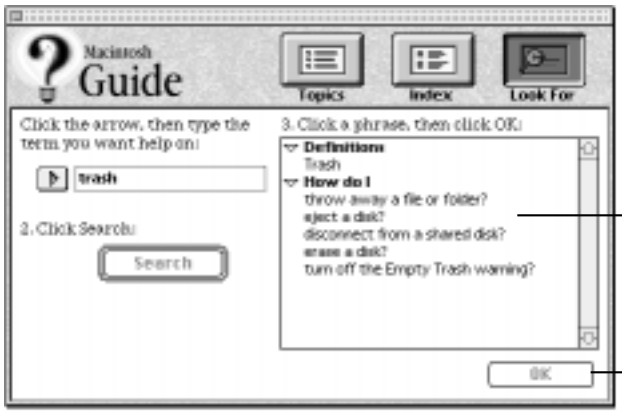
A small box where you can type text appears on the left side of the window.



2 **Click the arrow button to activate the text box.**

3 **Type “trash” in the text box, then click Search.**

When you click Search, a list of phrases and questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.



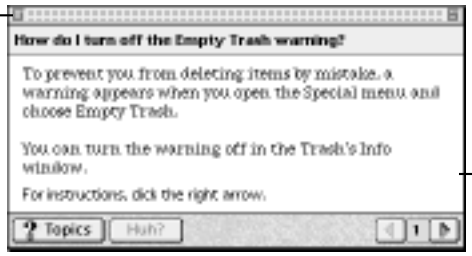
To get instructions, you click a phrase or question…

…and then click OK.

4 **Click the question “How do I turn off the Empty Trash warning?” and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.

If you want to close Macintosh Guide, you click here.



To see the next step (if there is one), you click here.

5 **Read and follow the instructions in the window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

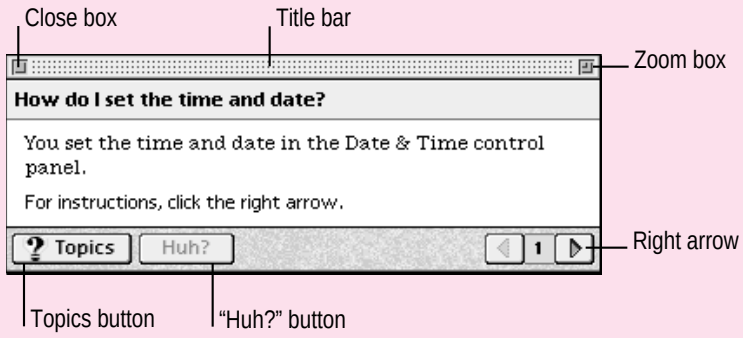
6 **When you have completed all the steps, click the close box in the upper-left corner to close Macintosh Guide.**

Tips for using Macintosh Guide

Here are a few tips for using Macintosh Guide effectively:

- Macintosh Guide is available only when you are in the Finder—the program that displays the desktop area where you can see the icons of disks, folders, and files. (Other programs may also have help available in the Guide menu, however.) If you don't see Macintosh Guide in the Guide menu, pull down the Application menu (to the right of the Guide menu) and choose Finder.
- Follow the steps when you're instructed to; don't skip ahead or read ahead. That way the computer can check to make sure you've done a step correctly.
- Unlike most windows, the Macintosh Guide window stays in front of other windows on the screen so that your instructions are never covered. If you need to move the Guide window out of the way, drag it by the title bar at the top of the window.

  You can also move the window out of the way by clicking the zoom box in the upper-right corner of the window. Click the box once to shrink the window; click it a second time to expand the window to its original size.
- If you need more information about an instruction or a term, click the button labeled "Huh?" to get a further explanation. (The "Huh?" button is dimmed when no additional information is available.)
- If you want to return to the main Macintosh Guide window, click the Topics button in the lower-left corner of the Guide window.
- When you're finished using Macintosh Guide, click the close box in the upper-left corner of the window.



Identifying what's on your computer screen

Sometimes you'll see an unfamiliar item on the screen and ask yourself, "What's that?" You can get an answer by using a Macintosh feature known as Balloon Help.

Using balloons like those you see in comic strips, Balloon Help explains the function of icons, menus, commands, and other items on the Macintosh screen.

Follow these steps to use Balloon Help:

1 **Open the Guide menu (marked with the ? icon) and choose Show Balloons.**

2 **With your mouse, move the pointer to any object on the screen that you want to identify.**

A balloon appears next to the object. In the following illustration, for example, pointing to the Trash displays a balloon that explains how to use the Trash.

Although balloons appear next to items when you point to them, the way you work does not change; you can still select icons, choose commands, and so on.

3 **When you're finished using Balloon Help, open the Guide menu again and choose Hide Balloons.**

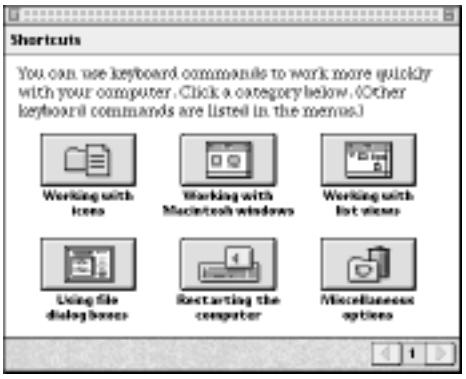
Learning useful shortcuts

You can perform many tasks in the Finder more quickly if you use keyboard or mouse shortcuts. For example, instead of clicking an icon and choosing Open from the File menu, you can simply double-click the icon to open it.

Follow these steps to learn keyboard and mouse shortcuts:

1 **Open the Guide menu (marked with the ? icon) and choose Shortcuts.**

The main Macintosh Shortcuts window appears.



2 **Click one of the category buttons.**

Another window appears, describing shortcuts for that category.

3 **Read about the shortcuts available for the category you selected.**

Click the right arrow in the lower-right corner of the window to see the next window (if there is one).

4 **When you finish reading about the shortcuts for your category, click the Topics button in the lower-left corner to return to the main Macintosh Shortcuts window. Or click the close box in the upper-left corner to close the window.**

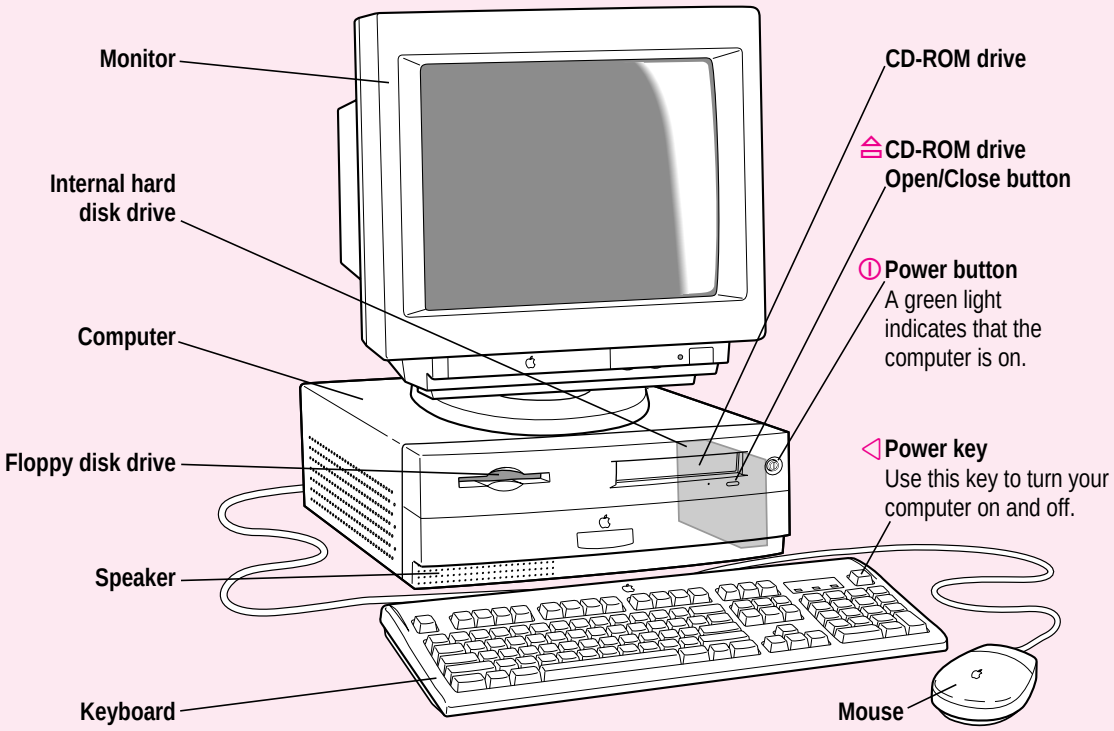
Read this chapter for information on connecting additional equipment to your computer, such as a printer, scanner, or other external equipment.

3 Connecting Equipment and Expanding Your Computer

The illustrations on the next pages show the basic computer system you now have. So that you can expand your system's capabilities, your computer has external ports to which you can connect additional hardware, such as a printer or scanner.

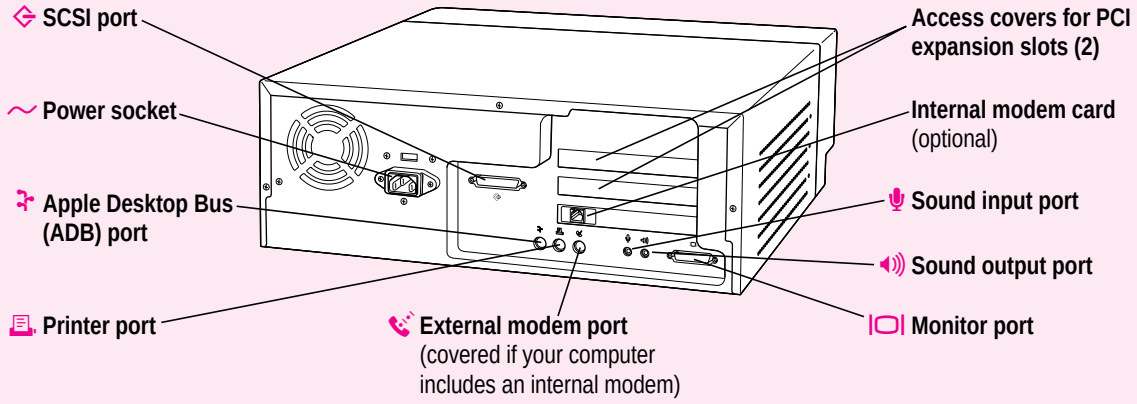
Your computer also has internal slots for adding items to increase its capabilities and performance. Among these items are additional dynamic random-access memory Dual Inline Memory Modules (DIMMs); a High Performance Module (256K level 2 cache); and expansion cards, such as PCI (peripheral component interconnect) and Ethernet cards. Instructions for installing these internal items are provided in Chapter 10, "Installing Expansion Cards and Additional Memory."

WARNING Before you connect any equipment to your computer, make sure that your computer is plugged in (in order to ground the computer) and turned off. If you connect equipment with the computer turned on, you can damage your computer and your equipment. Also, each device you add should be compatible with your computer and must not exceed the maximum power allowance for that device. For more information consult an Apple-authorized dealer, the manufacturer of the equipment you add, or the *Technical Information* booklet that came with your computer.



Ports and connectors on the back of your computer

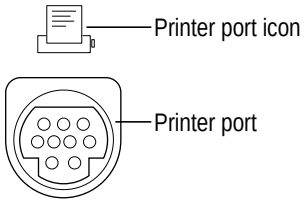
Apple Desktop Bus (ADB) port	Connects your Macintosh to an input device, such as a keyboard or a trackball.
Printer port	Connects your Macintosh to a printer, LocalTalk network, or GeoPort devices such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera.
External modem port	Connects your Macintosh to an external modem or GeoPort device, such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera. Since an external modem can't be used with the pre-installed internal modem card that came with your computer, this port is covered and disabled.
SCSI port	Connects your Macintosh to SCSI equipment, such as external hard disk drives and scanners.



Access cover for expansion slots		Covers ports for optional Peripheral Component Interconnect (PCI) slot expansion cards.
Internal modem card (optional)		The optional internal modem card. Most models of your computer come with a modem card already installed.
Monitor port		Connects your Macintosh to your monitor.
Sound output port		Connects your Macintosh to sound output equipment, such as externally powered (amplified) speakers.
Sound input port		Connects your Macintosh to another audio source, such as an Apple PlainTalk microphone or a compact disc or audio cassette player.

Connecting a printer

Your computer has a printer port, which you use to connect a printer to your computer.



Follow the instructions that came with your printer when connecting it to your computer.

Whether you have one printer or more attached to your computer, you must use the Chooser program to specify the port to connect the printer you want to use. For instructions on choosing a printer, open the Guide (?) menu, choose Macintosh Guide (or Mac OS Guide), click the Guide's Index button, and choose "printing" from the index.

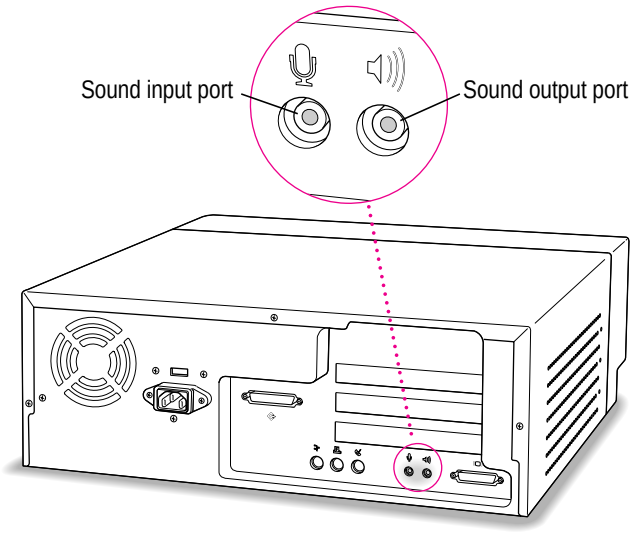
Connecting audio equipment

Your Macintosh can play and record stereo sound from a variety of sources. By connecting audio equipment to the sound input and output ports on the computer, you can listen to or reproduce stereo sound. Using the internal CD-ROM player, your computer can also play and record sound from audio compact discs (CDs).

For information on using Macintosh system software to choose audio input and output options, record an alert sound, or play audio CDs, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

About your computer's sound ports and features

The sound input port is marked with an icon of a microphone (🎙). The sound output port is marked with an icon of a speaker (🔊).



The computer's sound input port (🎙) accepts the 3.5-mm audio connectors shown below. The sound output port (🔊) (where you might connect external speakers) accepts only the stereo miniplug.

Stereo miniplug

Extended miniplug

The stereo miniplug is found most often on stereo equipment (such as externally powered speakers). The extended miniplug, which is slightly longer and is found on voice quality microphones (such as the Apple PlainTalk Microphone), works only in your computer's sound input port (🎙). (Even though it will fit into the sound output port, it won't work there.) If your equipment has a different type of connector from those shown here, you can purchase an adapter at an electronics supply store.

Connecting audio equipment

To play or record sound with your Macintosh, you can attach a microphone or a pair of speakers.

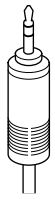
For instructions on connecting specific equipment, see the following sections later in this chapter:

- “Connecting an Apple PlainTalk Microphone”
- “Connecting External Stereo Speakers”
- “Connecting Headphones”

Follow these general instructions when connecting audio equipment to the Macintosh:

1 **Make sure that the audio equipment has a cable with a stereo miniplug or extended miniplug connector.**

If it does not, attach an adapter that has a stereo miniplug.



Stereo miniplug

2 **Place the audio equipment near the Macintosh.**

3 **Shut down the Macintosh and turn off the audio equipment.**

4 **Attach the cable to the audio equipment and to the appropriate sound port on the Macintosh.**

To record incoming sound on the computer, connect the audio equipment to the sound input port (🎙).

To record the sound produced by the computer or play that sound through externally powered (amplified) speakers, connect the audio equipment to the sound output port (🔊).

5 **Turn on the computer and the audio equipment.**

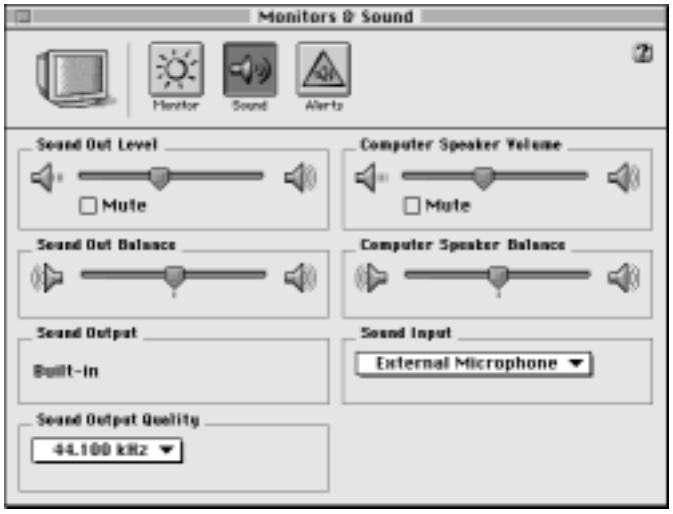
You're now ready to begin listening to and working with sound.

You can adjust the volume using the Monitors & Sound control panel, which uses software inside your computer to adjust sound. See the next section, "Adjusting Volume and Sound."

Adjusting volume and sound

There are several ways to adjust the volume on your computer:

- Use the volume controls on the front of your monitor if your monitor comes with built-in speakers.
- Use the volume control sliders in the Monitors & Sound control panel, as shown below. The Monitors & Sound control panel can be found in the Control Panels folder in the Apple (🍎) menu.
- Use the volume control slider in the AppleCD Audio Player if you are playing an audio CD. The AppleCD Audio Player can be found in the Apple (🍎) menu. The volume set in the Monitors & Sound control panel also affects the volume of the audio CD.



Note: Some monitors also place a "Monitor Sound" icon at the top of the Monitors & Sound control panel.

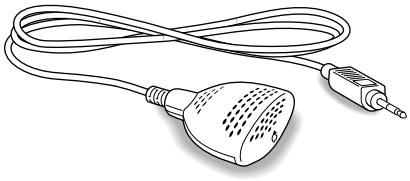
Tip: You may prefer to set the Sound Out Level slider to about the middle of the slider bar. This way, when you adjust the volume later in other ways—through the AppleCD Audio Player or through the volume controls on the computer or monitor—you can hear your adjustments better because the computer itself is set to about the middle of its volume range.

For more information about sound, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

Connecting an Apple PlainTalk Microphone

Your computer has a sound input port (🎤), which you can use to connect an Apple PlainTalk Microphone. The Apple PlainTalk Microphone is included with some computer models. If your computer did not include an Apple PlainTalk Microphone, you can purchase one at an Apple-authorized dealer. You cannot connect non-Apple microphones.

Note: The sound input port does not support the Apple Omni microphone (the round microphone shipped with some earlier models of Macintosh) or the attenuated RCA adapter provided with some models of Macintosh.



Apple PlainTalk Microphone

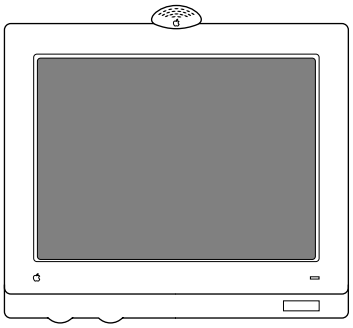
Note: If you want to record sound using the microphone built into your monitor (if you have such a monitor), see "Using Your Monitor's Built-in Microphone," later in this section.

To connect the microphone, follow the steps below.

1 **Shut down the Macintosh.**

2 **Plug the microphone's connector into the sound input port (🎙) on the back of the computer.**

3 **Place the microphone at the top center of the monitor, with the microphone's Apple (🍎) icon facing you.**



If you can't place the microphone on top of the monitor, position the microphone according to these guidelines:

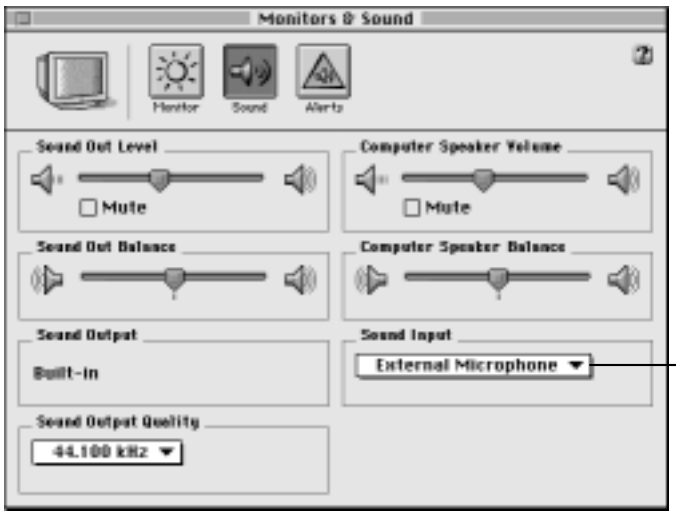
- The microphone should be between one and three feet away from you.
- The microphone should be directly in front of you to minimize the effect of background noises.

4 **Turn on the computer.**

Next, make sure the Sound In source in your computer is set to External Microphone.

5 **Open the Monitors & Sound control panel in the Apple (🍎) menu and click the Sound icon.**

6 **Click the Sound Input pop-up menu and select External Microphone.**



Select External Microphone from the pop-up menu.

7 **Click the close box in the upper-left corner of the Monitors & Sound control panel to close it. (The control panel does not have to remain open while you're recording.)**

You're now ready to begin using your microphone.

See the "Sound" topic of Macintosh Guide, available in the Guide (?) menu, for instructions on recording.

Using your monitor's built-in microphone

If your monitor has a built-in microphone and you want to use it to record, follow these steps:

1 **Open the Monitors & Sound control panel in the Control Panels folder in the Apple (🍎) menu.**

2 **Click the Sound icon.**

3 **From the Sound Input pop-up menu, select External Microphone.**

4 **In the Monitors & Sound control panel, mute your monitor's built-in speakers.**

You may need to click a "Monitor Sound" icon at the top of the Monitors & Sound control panel to display your monitor's sound controls and mute its built-in speakers.

5 **In the Monitors & Sound control panel, select your monitor's built-in microphone.**

You may need to click a "Monitor Sound" icon at the top of the Monitors & Sound control panel to display your monitor's sound controls and select its built-in microphone.

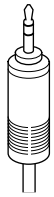
See the "Sound" topic of Macintosh Guide, available in the Guide (?) menu, if you need further instructions on recording.

Connecting external stereo speakers

You can take advantage of your computer's stereo sound output by attaching externally powered (amplified) speakers.

1 **Assemble the speakers and the cable you need.**

You need a cable with a stereo miniplug at one end to connect one or both speakers to the computer.



Stereo miniplug

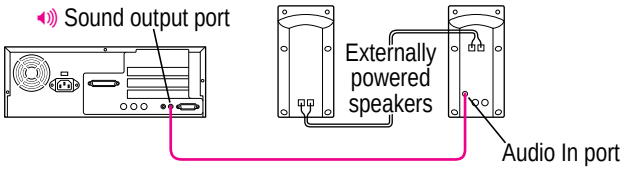
Some speakers require a dual-plug adapter. Others, like those shown in the next illustration, accept a single stereo miniplug and are joined by standard speaker wires. See the documentation that came with your speakers for more information.

2 **Turn off the Macintosh.**

3 **Plug the stereo miniplug into the sound output port (🔊) on the Macintosh.**

4 **Connect the speakers together with speaker wires, if necessary.**

Your finished connections should look something like this:



5 **Turn on the computer.**

Now you're ready to hear full-range stereo sound coming from the speakers.

To adjust the overall volume, use the Monitors & Sound control panel, which uses software inside your computer to adjust volume. (For more information, see "Adjusting Volume and Sound," earlier in this section.)

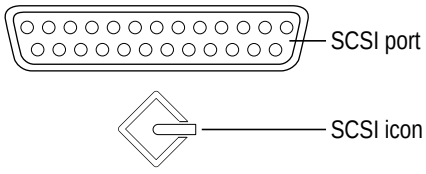
Connecting headphones

If your monitor has a headphone jack, you can connect headphones to it.

For more information on listening with headphones, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

Connecting external SCSI devices, such as a scanner or external hard disk

Your computer has a port for connecting devices that use the Small Computer System Interface (SCSI, pronounced "skuh-zee"). SCSI devices commonly used with the Macintosh include hard disk drives, CD-ROM drives, scanners, tape or cartridge backup drives, and some printers. The SCSI port permits high-speed communication between the computer and the device. The SCSI icon appears underneath the port on the computer's back panel.



You can connect several SCSI devices to the SCSI port by linking them together in a chain: the first device in the chain plugs into the SCSI port; the second device plugs into the first device, and so on. You can attach up to seven external SCSI devices to the SCSI port.

Each SCSI device connected to this chain must have its own unique ID number (no two devices can use the same ID number). The computer itself (the main logic board inside it) uses SCSI ID number 7.

IMPORTANT The material that follows—"Before You Connect a Device" and "Connecting a SCSI Device"—contains general instructions for attaching SCSI devices to your computer. Make sure you also follow the specific instructions that came with the SCSI device you are connecting to your Macintosh.

Before you connect a device

Before you connect a SCSI device to your Macintosh, be sure to complete the tasks explained in this section.

IMPORTANT This section contains general instructions for attaching SCSI devices to your computer. Be sure also to follow the specific instructions that came with your external hard disk drive or other SCSI device when connecting the device to your Macintosh. The specific instructions that came with the device tell how to change a device's ID number and attach a SCSI cable or terminator to the device.

Make sure each device has a unique ID

Each SCSI device connected to your computer must have its own, unique ID number from 0 to 6. The SCSI ID number helps the computer keep track of the devices and sort out conflicts when more than one device in the SCSI chain is communicating with the computer simultaneously.

Make sure other SCSI devices you add to the chain do not use ID numbers that are already assigned. See the instructions that came with each SCSI device for information on checking and setting its SCSI ID number.

IMPORTANT If you use two or more devices attached to the same SCSI interface with the same ID number, your equipment could malfunction and you could lose data as a result.

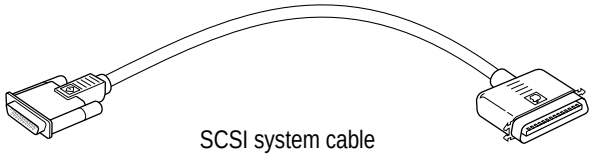
The SCSI devices can be in any physical order in the chain; it is not necessary to arrange them in numerical order.

Make sure you use the right type and length of cable

To attach a SCSI device to your computer or to another device in the chain, always use SCSI cables that are double-shielded, such as Apple SCSI cables. Never use printer-type RS-232 cables (commonly used with DOS and Windows computers). Poor quality SCSI cables are often the cause of SCSI problems.

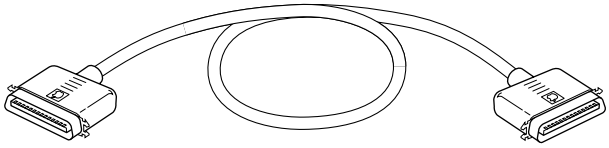
Avoid mixing brands, types, or styles of SCSI cables.

If the device is the first or only one you're connecting, use a SCSI system cable to connect it to the computer's SCSI port:



SCSI system cable

If the device is not the first one, use a SCSI peripheral interface cable to connect it to the last device in the chain:



SCSI peripheral interface cable

IMPORTANT The total length of the cables in a SCSI chain should not exceed 6 meters (about 20 feet). SCSI cables must have a 110-ohm impedance. For best results, use SCSI cables manufactured by Apple Computer.

Keep the cables between SCSI devices as short as possible. Cables 18 to 24 inches are best. Some SCSI devices (particularly scanners) may not be able to work with cables longer than 24 inches.

Terminate the SCSI chain properly

To ensure accurate transmission of information, a terminator must be at each end of a SCSI chain. There is a built-in terminator at the beginning of the chain. You need to make sure that the last device in the chain has a terminator.

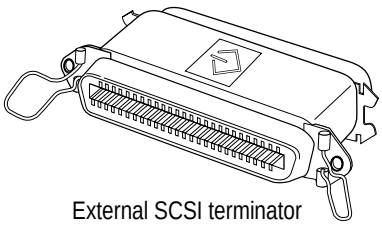
IMPORTANT In most cases, only the first and last devices in the SCSI chain should be terminated. Make sure that no external SCSI device other than the last one has a terminator.

To terminate the last device in the chain:

- If your SCSI device has a built-in terminator, use it as the last device in the chain.

  If you wish to attach two or more SCSI devices that have built-in terminators, an Apple-authorized service provider can remove the extra built-in terminators.

- If the device at the end of the SCSI chain does not have a built-in terminator, attach an external terminator. You can attach or remove external terminators yourself. (Do not use a black terminator; the black terminators are for Macintosh IIfx computers and certain LaserWriter printers.)



External SCSI terminator

Exceptions to the "first and last" rule: If the SCSI chain is 18 inches or shorter, the terminator on the last device is not needed. If a total cable length in the chain is greater than 10 feet, the chain may need a third terminator at the 10-foot point. Do not add the third terminator unless you are experiencing a SCSI problem, and check all other possible causes of the problem before adding the third terminator. (See the information on troubleshooting SCSI problems in Chapter 9 of this manual.)

Connecting a SCSI device

Be sure to read the previous section, “Before You Connect a Device,” before following the instructions here. Use these general instructions in conjunction with the instructions that came with your SCSI device:

1 **Turn off your Macintosh.**

2 **Make sure the SCSI device is switched off.**

WARNING Do not connect or disconnect any device while the device or your Macintosh is turned on. Doing so could damage the device, your computer, or both.

3 **Use a SCSI cable to connect the device either to the computer’s SCSI port or to the last SCSI device already in the chain.**

IMPORTANT Make sure that the last (or only) device in the SCSI chain has a terminator and that no other external SCSI device has a terminator. Otherwise, the computer may not be able to start up.

Use the thumbscrews and metal clips on the connectors to create a tight, reliable connection.

4 **Turn on all devices in your SCSI chain.**

IMPORTANT Always turn on any external SCSI devices connected to your Macintosh before turning on the computer itself. Otherwise, your computer won’t be able to recognize that the SCSI devices are connected to it and your computer may not be able to start up.

Even if you don’t plan to use a device, you must still turn it on to ensure that signals pass properly along the SCSI chain.

5 **Install any necessary device drivers (software that makes a device work with your computer).**

Drivers usually come on a floppy disk with the device. (If no drivers come with the device, contact the device's manufacturer.)

Note: If you experience problems after connecting a SCSI device, see the troubleshooting information in Chapter 9 for possible solutions.

Replacing internal storage devices

Your Macintosh comes with three internal storage devices—a floppy disk drive, a CD-ROM (compact disc read-only memory) drive, and a hard disk drive. If you want to replace any of these internal drives, see your Apple-authorized dealer.

Read this chapter to learn how to work with application programs.

4 Installing and Using Application Programs

Your computer came with a number of application programs already installed. You open these programs by clicking their buttons in the Launcher. The Apple Extras folder on your hard disk also contains some programs.

You can find backup copies of all your computer's preinstalled application programs on the *Macintosh Restore CD* and other restore CDs that came with your computer. If you ever need to restore (reinstall) one or more of the preinstalled programs, see the section "Copying Files From the *Macintosh Restore CD* to Your Hard Disk" in Chapter 8. If you ever need to restore all of the preinstalled programs, start at the beginning of that chapter.

Installing application programs

You may want to buy and install additional application programs. See the manuals you receive with these applications for instructions on installing and using them.

To use your applications most effectively, follow these guidelines:

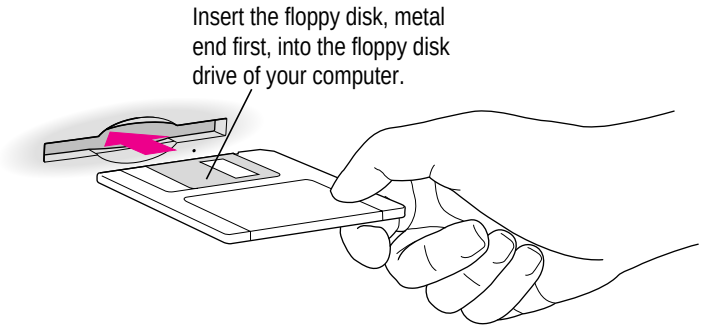
- Read the manuals you received with the program if you have a problem.
- Put only one copy of each application on your hard disk. Having more than one copy can cause errors.
- Whenever you copy an application from its disk to your hard disk, be careful not to copy a System Folder.

- If a program malfunctions consistently, try installing a fresh copy. If that doesn't help, find out from the software manufacturer whether your version of the program is compatible with your computer model and your system software.

Note: You may want to put your application programs in the Launcher where they can be accessed by the simple click of a button. To put a program in the Launcher, drag the program's icon or its alias into the Launcher window or onto the Applications category button in the Launcher. (To make an alias of a program, select its icon and choose Make Alias from the File menu. For more information about the Launcher, see the "Tips & Features" topic area of Macintosh Guide [or Mac OS Guide].)

Installing programs from a floppy disk

In most cases, you install application programs on your internal hard disk from floppy disks. The following illustration shows how to insert a floppy disk into your computer's floppy disk drive.



For instructions on how to eject floppy disks, see the "Disks" topic area of Macintosh Guide, available in the Guide (?) menu.

Installing applications from a CD-ROM disc

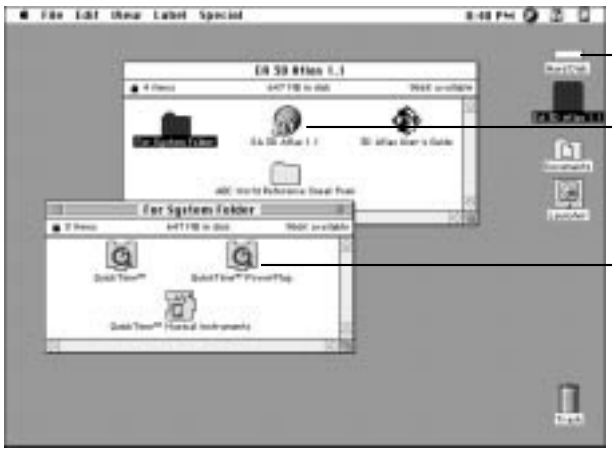
Sometimes you'll install an application program on your internal hard disk from a CD-ROM disc that contains the program. (For instructions on using a CD-ROM disc, see "Inserting a CD-ROM Disc" and "Ejecting a CD-ROM Disc" in Chapter 5.)

Follow these general guidelines when installing applications from a CD-ROM disc and also check the disc itself for specific instructions:

- If there is a program Installer icon on the CD-ROM disc, double-click the icon to install the program on your hard disk. When the installation finishes, click the new version of the program's icon on your hard disk to open it.
- If instructions tell you to copy the disc's application program to your hard disk, do so by dragging the program's icon to your hard disk. However, do not follow any instructions on the CD-ROM disc to copy such items as QuickTime, Sound Manager, or System Folder files to your hard disk. Your computer already comes with the most up-to-date versions of these items, which have been tested for compatibility with each other and all the other software on your Macintosh. By replacing your hard disk's items with the versions on the CD-ROM, you may be installing outdated or incompatible software, which could cause problems.

Note: You don't have to copy or install a program every time you want to use the program, only the first time. However, to use some interactive applications that come on a CD-ROM disc, the disc must be in the CD-ROM drive and its icon visible on your desktop, even if you have previously installed the application on your hard disk.

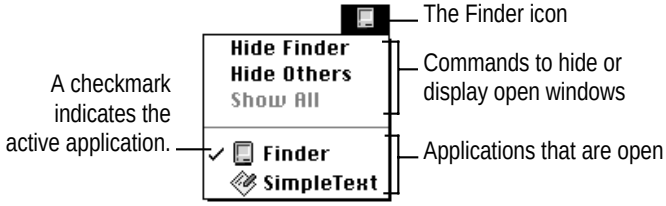
IMPORTANT Never drag an entire CD-ROM disc icon to your hard disk. Copying the CD-ROM disc itself will take up most or all of the space on your hard disk.



Working with several applications at a time

You can open as many application applications and desk accessories (mini-applications that you usually open through the Apple [] menu) as your computer's memory allows.

All open applications are listed in the Application menu at the right end of the menu bar. You can find out which program is active and which other applications are open by pulling down the Application menu. The name of the active program (the one you're using right now) has a checkmark next to it, and its icon appears in the menu bar.



Switching applications

You can switch to another open application by choosing its name from the Application menu.

If an application's icon is dimmed in the Application menu, that means its windows are hidden. You can still choose the application from the menu, however, to display the application's windows.

You can also switch to another application by clicking in a window that belongs to an open application, by double-clicking an application icon, or by double-clicking the icon of a document that was created with the application.

Hiding and showing windows on the desktop

You can hide all windows except those of the active application by opening the Application menu and choosing Hide Others.

The other applications remain open even though their windows are hidden. When you switch to another application, its windows become visible again.

If you want to see all the open windows, open the Application menu and choose Show All.

Increasing memory available to run applications

In most cases, your computer already contains enough random-access memory (RAM) to run several applications and keep a large number of windows open at one time. There are times, however, when you need even more RAM for applications to run or to open an even greater number of windows. You can increase the amount of available RAM with a computer feature called virtual memory, which uses free space on your computer's hard disk as if it were RAM. If you choose to use virtual memory, keep in mind that it may also result in slightly slower computer performance. See the "Memory" topic area of Macintosh Guide, available in the Guide (?) menu, for more information. Also see the document titled "About Virtual Memory" in the Documents folder on your desktop.

IMPORTANT Virtual memory may keep some applications from running at their best speed. Don't turn on virtual memory unless you need to keep several applications open at once. You should turn it off when you no longer need it. (You can turn virtual memory on or off by using the Memory control panel in the Control Panels folder in the Apple [] menu.)

Note: If you turn on both virtual memory and a RAM disk in the Memory control panel, don't set both of them at or near their maximum values. A RAM disk uses RAM as if it were hard disk space. Using both can result in unpredictable or reduced performance by your computer.

Protecting the information on a disk

When you have a valuable paper document like a birth certificate, you probably make an extra copy of it for safekeeping. Similarly, you should make copies of the documents you create on your computer. The extra copy is called a *backup*, and the process of making the copy is called *backing up*.

Once you have a backup, you're protected from accidentally losing the information on your hard disk. In the unlikely event that something happens to your hard disk, you can easily get the information back.

Making backup copies of your documents

Follow these tips for making backup copies of the documents on your computer:

- *Regularly* make copies of the documents you create.
- You can back up files stored on your hard disk by copying them to floppy disks.
- You can back up an entire floppy disk by copying it to another floppy disk of the same capacity or larger, or by copying it to a hard disk.
- If a file is too large to fit onto a single floppy disk, you need to use a commercial backup application to copy the file onto multiple floppy disks.
- You can use a commercial backup application to copy new and changed files from a hard disk to another hard disk, to a tape drive, or to a series of floppy disks.
- If your computer is on a network, you may be able to back up files by copying them to a shared disk on the network.

A helpful tip: A good way to remember which documents you have stored where is to print a copy of the items you've stored in a folder. For instructions on printing the contents of a folder, see the "Printing" topic area of Macintosh Guide, available in the Guide (?) menu.

Restoring the information on your hard disk

Your computer's hard disk comes with valuable information already stored on it, including system software and some applications. If information on your hard disk becomes damaged or lost, you can restore it if you have a backup copy of the information. The *Macintosh Restore CD* contains copies of all the system software and applications that came with your computer. See Chapter 8, "Reinstalling Your Computer's Software," for instructions on using the *Macintosh Restore CD* to reinstall software.

It is also helpful for easy reference to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic area of Macintosh Guide, available in the Guide (?) menu.

Using applications designed for the PowerPC microprocessor

Your Macintosh is compatible with most applications intended for use with Macintosh computers, but certain applications are designed especially for computers that have the PowerPC microprocessor. Sometimes called "native" applications, these applications take best advantage of your computer's speed.

Special memory requirements

Some native applications may be slightly larger than other applications and may take up more memory. If you find that you are running out of memory when you use one of these applications, you can use space on your computer's hard disk as additional memory, which is called virtual memory. For instructions on how to use virtual memory, see the "Memory" area topic of Macintosh Guide, available in the Guide (?) menu.

You can also add more memory to your computer, as described in Chapter 10, "Installing Expansion Cards and Additional Memory."

Using older Macintosh applications

If you experience problems using an older Macintosh application, it may be incompatible with your Macintosh. You may be able to use your older application if you turn off Modern Memory Manager. To do this, open the Apple (apple) menu, open the Control Panels submenu, and select the Memory control panel. Then turn off Modern Memory Manager.

Read this chapter for information about your computer's CD-ROM drive.

5 Using the Built-in CD-ROM Drive

This chapter provides information on the CD-ROM drive (also called a CD-ROM player). Refer to Appendix A, "Health, Safety, and Maintenance Tips," for information on the proper handling of CD-ROM discs.

With your internal CD-ROM (compact disc read-only memory) drive, you have access to large amounts of information. The CD-ROM drive can read the contents of CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. However, you cannot use the drive to save information on CD-ROM discs. ROM stands for *read-only memory,* meaning that the drive cannot "write" information onto CD-ROM discs.

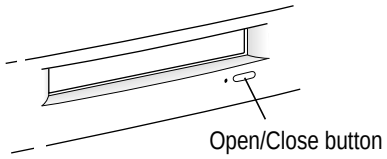
A wide selection of CD-ROM discs is available for entertainment, education, and business. A typical disc can hold over 650 megabytes (MB) of information—the equivalent of 270,000 pages of text, up to 8 hours of speech or music (depending on the sound quality), hundreds of high-resolution images, or any combination of text, sound, and graphics.

Inserting a CD-ROM disc

Follow these instructions to insert a CD-ROM disc into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

IMPORTANT Some CD-ROM disc labels have artwork on them that can cause the disc to be slightly off-center when it rotates in the drive. This may make the computer vibrate. See the next section, "If Your CD-ROM Disc Vibrates in the CD-ROM Drive," for more information.

1. **Start up your computer, if it's not already on.**
2. **Press the Open/Close button to open the tray of the CD-ROM drive.**

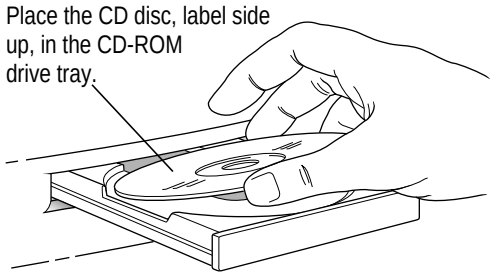


The tray opens.

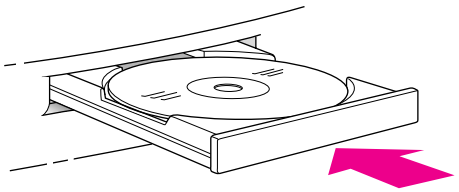
3. **Place a CD-ROM disc in the tray, with the disc label facing up.**

Make sure the disc is lying flat and centered in the tray.

If you are using a small (8 cm) disc, make sure the disc is centered within the inside ring on the tray.



4 **Push the tray in, or press the Open/Close button, to close the tray.**



In a few moments, an icon for the CD-ROM disc appears on your screen.

Note: The tray on your CD-ROM drive automatically closes when you shut down your computer. You may want to open the tray and take out your CD-ROM disc before shutting down.

If your CD-ROM disc vibrates in the CD-ROM drive

Some CD-ROM disc labels have artwork on them that can cause the disc's weight to be slightly off-center. Occasionally, this uneven distribution of weight coupled with the high rotation speed of your CD-ROM drive can cause a disc to wobble in the drive and cause your computer to vibrate. If your computer does begin to vibrate, you don't need to do anything special; continue to use the CD-ROM disc as you normally would. The vibration damages neither the CD-ROM disc nor the computer.

Note: Removing a label from a disc that vibrates may eliminate the vibration.

Ejecting a CD-ROM disc

Follow these instructions to open the CD-ROM drive tray and eject a CD-ROM disc from your computer.

IMPORTANT You may not be able to eject a disc if it is shared (available to other computers). To turn off file sharing, use the Sharing Setup control panel in the Control Panels folder, which is available in the Apple (🍎) menu.

1 Open the tray.

There are several ways to open the tray of your CD-ROM drive.

If a CD-ROM disc icon appears on your screen, use one of these methods:

- Select the disc icon on your screen and drag the icon to the Trash. (You won't lose information on the CD-ROM disc by dragging its icon to the Trash.)
- Click the disc icon and choose the Put Away command in the File menu.

  IMPORTANT Don't click the disc icon and choose Eject Disk from the Special menu. If you do this, the computer still holds the CD-ROM disc in its memory and keeps asking you to reinsert it.

- If the AppleCD Audio Player window is active, choose Eject CD from the File menu, or simultaneously press the ⌘ and E keys. (AppleCD Audio Player, a program that allows you to play audio CDs and to control your CD-ROM player, is available in the Apple [🍎] menu.)

If no CD-ROM disc icon appears on your screen, do this:

- Press the Open/Close button for your CD-ROM drive.

2 Take the CD-ROM disc out of the tray.

Store your disc in a safe place, away from heat, dust, and moisture.

3 Push the tray in, or press the Open/Close button, to close the tray.

To avoid possible damage to the tray and the CD-ROM drive, keep the tray closed when you are not using it.

Using the CD-ROM discs that came with your computer

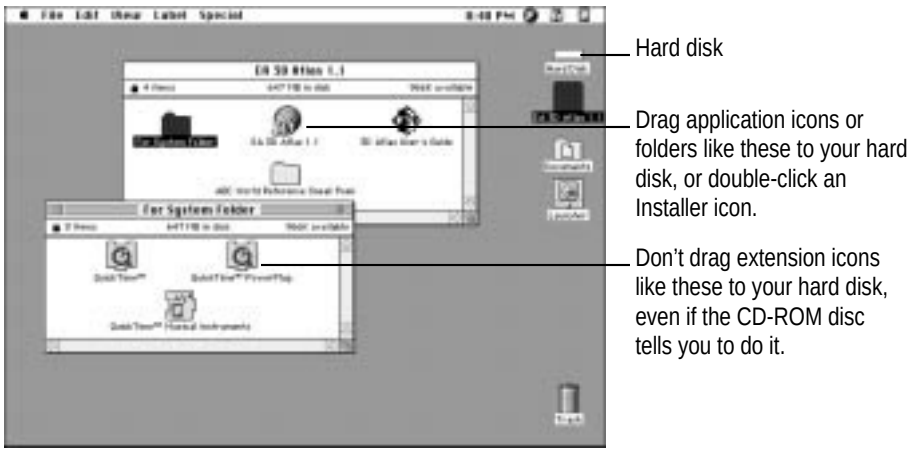
Sometimes you'll install an application program on your internal hard disk from a CD-ROM disc that contains the program. (For instructions on using a CD-ROM disc, see "Inserting a CD-ROM Disc" and "Ejecting a CD-ROM Disc" earlier in this chapter.)

Follow these general guidelines when installing applications from a CD-ROM disc and also check the disc itself for specific instructions:

- If there is an Installer icon on the CD-ROM disc, double-click the icon to install the program on your hard disk. When the installation finishes, click the new version of the program's icon on your hard disk to open it.
- If instructions tell you to copy the disc's application program to your hard disk, do so by dragging the program's icon to your hard disk. However, do not follow any instructions on the CD-ROM disc to copy such items as QuickTime, Sound Manager, or System Folder files to your hard disk. Your computer already comes with the most up-to-date versions of these items, which have been tested for compatibility with each other and all the other software on your Macintosh. By replacing your hard disk's items with the versions on the CD-ROM, you may be installing outdated or incompatible software, which could cause problems.

  By the way: You don't have to copy or install a program every time you want to use the program, only the first time. However, to use some interactive applications that come on a CD-ROM disc, the disc must be in the CD-ROM drive and its icon visible on your desktop, even if you have previously installed the application on your hard disk.

IMPORTANT Never drag an entire CD-ROM disc icon to your hard disk. Copying the CD-ROM disc itself will take up most or all of the space on your hard disk.



Types of compact discs you can use

Not all CD-ROM discs store information in the same way. A disc stores and displays information according to a particular file format. Your computer's system software must understand the file format in order to use the contents of the disc.

Standard file formats

You can use CD-ROM discs with these standard file formats:

- HFS (Hierarchical File System)—the standard format used by the Macintosh.
- ISO 9660—the International Standards Organization's file format for CD-ROM discs. This format has been adopted by many CD manufacturers to make their discs compatible with a variety of computers. It is also the format that allows you to use Photo CDs in your CD-ROM drive.

- The High Sierra format, a predecessor of the ISO 9660 format.
- Photo CDs.
- Audio CDs.

The software that lets you use discs with these file formats is already installed on your computer.

Other CD-ROM formats

Your CD-ROM drive also works with file formats other than the ones listed above (for example, CD-ROM XA) if you install the appropriate software on your Macintosh. To find out about the availability of Macintosh software for additional file formats, contact the publisher of a particular disc.

Audio CDs

Your CD-ROM drive can play audio CDs and audio tracks on CD-ROM discs using your computer's built-in speaker. You can also attach headphones or speakers to your computer for stereo sound. For further information, see "Playing Audio CDs" later in this chapter. Also see the "CD-ROM Discs" topic area of Macintosh Guide (or Mac OS Guide), available in the Guide (?) menu.

Photo CDs

With your CD-ROM drive, you can use QuickTime to open digitized images stored on Photo CDs.

For more information on Photo CDs, see "Working With Photo CDs" later in this chapter. Also see the "CD-ROM Discs" topic area of Macintosh Guide, available in the Guide (?) menu.

Playing audio CDs

With your CD-ROM drive and your computer's built-in speaker, you can play audio compact discs (CDs) or audio tracks on CD-ROM discs. You can also attach headphones or speakers to the computer to listen to audio tracks. See Chapter 3 for information on connecting sound equipment to your computer.

To start, stop, and otherwise control audio CDs, use the AppleCD Audio Player program, available in the Apple (🍎) menu. Your audio CD software will only play tracks that contain audio information. With the AppleCD Audio Player program, you can listen to an audio CD or audio tracks while doing other work on your computer. For more information about playing audio CDs, see the "CD-ROM Discs" topic area of Macintosh Guide, available in the Guide (?) menu.

Working with Photo CDs

With your CD-ROM drive and software, you can open Photo CD images stored on Photo CDs. A Photo CD image is a digitized version of a standard photograph that you can open and view on your computer screen.

You can do many things with the images on your Photo CDs:

- open and view the images individually
- view the images in a series, as you would view a slide presentation
- copy and save the images, print them, paste them into word-processing documents or other documents that accept graphics, and edit them with a graphics application program

Photo CD images are an excellent source of graphics for desktop publishing, multimedia presentations, business documents, and professional-quality graphic design. For more information on working with Photo CD images, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (?) menu.

Obtaining Photo CDs

Your own photographs can be recorded as Photo CD images on a Photo CD. To obtain a photo CD of your own photographs, take your standard 35-mm film to a photofinisher who has a Photo CD system. The photofinisher develops your film, digitizes the photographs, and gives you back a Photo CD containing your images. A single Photo CD can hold approximately one hundred images.

If your Photo CD isn't full, you can take it back to the photofinisher and have more photos added until the disc is full. Such discs are called *multisession discs* because they contain images added after the first session. Your CD-ROM drive can read both single-session and multisession Photo CDs. (Other CD-ROM drives can read only single-session discs and are unable to read the additional images placed on a multisession disc.)

Before viewing the contents of a Photo CD

You can open Photo CD images with the Simple Text program that came with your computer. If you wish, you can use a graphics or image-editing program instead of SimpleText. For instructions, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (?) menu. If you use SimpleText to view high-resolution images, you should increase the amount of memory that SimpleText uses. For more information about memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?).

A note about resolution

When a Photo CD is created, its images are recorded at five different levels of resolution. The higher the resolution, the more information is recorded about the image and the sharper the image appears when displayed or printed at larger sizes. However, high-resolution images take up a lot of memory—up to 18 MB of data for one photograph–which increases file size, as well as the amount of time it takes to display or print an image.

It's best to work with a resolution appropriate for your monitor or printer. Some monitors and printers cannot display or print very high-resolution images.

Sharing a CD-ROM disc over a network

You can share a CD-ROM disc with other computer users over a network by using the file-sharing feature of System 7.5. If your disc has audio portions, you will be able to hear the audio yourself, but other people on the network will not. Likewise, you cannot hear the audio portions of discs you access over a network.

IMPORTANT You may not be able to eject a disc if it is shared. To turn off file sharing, use the Sharing Setup control panel in the Control Panels folder, which is in the Apple ( ) menu.

For further information about file sharing in System 7.5, see the "Sharing Files" topic area of Macintosh Guide, available in the Guide (?) menu.

Read this chapter for information about the Internet and online service software that is included with your computer.

6 Using Your Modem to Connect to the Internet or an Online Service

This chapter discusses how you use your Macintosh to connect to the fastest growing organization on earth: the online community. This community gathers in private places provided by subscriber-only services and in the public space called the *Internet*. With a modem and the right software, you have a couple of options for reaching these meeting places. Once you arrive you can exchange e-mail messages, browse the World Wide Web, gather information on topics of interest to you, participate in discussion groups, download software, and use many other services. This chapter provides some explanations and instructions to help you connect.

About the Internet and its language

The Internet, or "Net" as it's sometimes called, is a loosely knit federation of computer networks that "speak" the same language. The language in this case, is a communications standard known as the *Internet protocol*, or *IP*.

No one individual or company owns the Internet, and the individual computers and the networks of computers knitted into it are located all over the world. Originally created for military purposes, the Internet developed dramatically as universities began using it to share information and data. It has now become an expansive resource for millions of users around the world, catering to virtually every imaginable interest.

You may have come upon the term *TCP/IP*, or *Transmission Control Protocol*. TCP/IP is the series of protocols used for sending data across the Internet. Sending a message across the Internet involves a three-step process. First, a network computer breaks up the data that make up the message into several smaller data packages, each of which conforms to a strict set of guidelines. These guidelines are called *TCP*. Once the computer has properly prepared the packages, it sends them out for delivery. The packets' addresses, directions on how to deliver them, and other routing specifications are dictated by the other set of guidelines mentioned earlier, Internet Protocol (IP). Because of the Internet's complexity, the packages may not travel together, even though they are bound for the same address, and may even arrive at different times. Using TCP, the computer at the receiving end unscrambles the packets and sorts the data to re-create the original message.

Using your modem to connect to an Internet service provider or an online service

Once you have physically connected your modem to a phone line, you have several choices to make before you can get to the Internet. First, you must connect to and open an account with an electronic service provider. Providers fall generally into two categories: Internet service providers (ISPs) and online services. Each has its distinct qualities; both charge a fee for your account. Your Macintosh comes with two software packages that give you the choice of connecting with an ISP or an online service. The software items are the Apple Internet Connection Kit (AICK) and America Online (AOL), respectively.

Connecting with the Apple Internet Connection Kit

As the name implies, the facilities of an Internet Service Provider let you use your computer to get onto the Internet. Although some ISPs offer other services, Internet access is their main business. Once you connect with an ISP, you have unlimited access to the Internet because your connection with the ISP actually turns your computer into a part of the network itself.

All the software you need to connect with an ISP is included with your computer in the Apple Internet Connection Kit (AICK). This software package helps you select and set up an account with one of several ISPs and helps you set up your Internet connection software. AICK also contains several other software utilities designed for the Internet. For more information and instructions, see the manual and online help that come with AICK.

Connecting with America Online

Unlike ISPs, online services provide additional services for their members alone. An online service may offer e-mail, updated news, sports scores, and stock price updates, special chat groups, and other services as well as a connection to the Internet. Some, like AOL, also offer their own software for use on the Internet. Online services work differently from ISPs in that they filter and funnel some of the data before you receive it and do not make your computer an actual part of the Internet. This allows such services to tailor the Internet access they provide their members. For example, Internet sites deemed not suitable for children can be placed off limits. You might consider this in deciding whether to select an online service or an ISP.

Your computer includes the software needed to connect with America Online (AOL). Because AOL is very easy to use it may be the best choice if you have never used an online service or the Internet before. You can open the AOL software by double-clicking its icon. Check the onscreen help that comes with the software for assistance on establishing an account with AOL.

What the connection software does

Once you have selected a service that will get you to the Internet, you must first establish a phone link with the service and configure your modem so that it can "speak" with the service's computers. Like the TCP/IP language spoken among computers on the Internet, your modem communicates with the service's computers in an industry-standard language, called *Point-to-Point Protocol*, or *PPP*. The data sent by your computer in PPP is converted by the service's computers into TCP/IP and then is sent out over the Internet. When data arrives from the Internet, the translation process occurs in reverse.

When you use AICK, the Internet Dialer program establishes and configures the PPP connection between your modem and the chosen ISP. A similar piece of software sets up the connection when you use AOL. See the instructions that come with AICK and AOL for more information.

What you can do on the Internet

The complexity of the Internet makes it possible to communicate across it in a variety of ways, including exchanging e-mail, teleconferencing, and retrieving files. Both AICK and AOL provide you with software required for some of these forms of communication. (For more information, refer to the relevant manual and online help for AICK and AOL.)

Browse the World Wide Web

The World Wide Web (also known as *the Web*) is the fastest growing part of the Internet. You view information on the Web by using software called a *Web browser*. You can view color images, animation, and video, and even hear sound. The "documents" that you view on the Web are known as *Web pages*, a collection of which is called a *Web site*. Web pages and sites contain links to other pages and sites. When you click a word or image that has been designated as a link, your browser automatically displays the contents of the linked page. Following is a portion of the "home page" of the Apple Computer web site.

E-mail

You use electronic mail, or e-mail, to exchange information in much the same way that you use paper mail, except that e-mail is faster and more convenient. It is as easy to send a message to a single recipient as it is to send the same message to many recipients. You can also attach entire electronic files to e-mail.

Newsgroups

You can participate in “newsgroups”—worldwide public discussion groups for debating issues and for exchanging information. You can subscribe to a newsgroup for almost any topic imaginable, and you can read, respond to, and create your own messages, usually referred to as articles. Most newsgroups are unmoderated, which means that you can post your articles directly to the newsgroup. Other newsgroups are moderated, which means someone screens the articles and posts only those deemed appropriate for the newsgroup.

FTP

You can use File Transfer Protocol (FTP) software to transfer files to or from other computers on the Internet. Many specialized computers known as *servers* provide Internet users with files through FTP. FTP software comes in handy when you want to download (copy to your computer) software or software updates over the Internet.

Telnet

With Telnet software you can log onto other computers so that you can use their programs and data as if those items were on your own hard disk. Many libraries, for instance, have electronic (online) card catalogs that you can access by using Telnet software. There are a variety of other specialized databases that you can access through Telnet.

Read this chapter for information about connecting to other computers in a local area network.

7 Connecting Your Computer to a Network

Any group of computers and other devices connected in order to communicate with each other constitutes a network. Some networks connect all their computers by a particular type of cable. Such networks are called a local area network (LAN). LANs can be as simple as two computers connected together or as complex as a business's in-house computer network. Sometimes groups of networks connect to form a larger network, such as the Internet. This is called a wide area network (WAN). This chapter discusses several types of LANs to which you can connect your computer.

Connecting to a network expands the features of your computer by giving you access to the services and resources provided on the network. For example, your computer by itself lets you store, retrieve, and modify information on floppy disks, hard disks, and CD-ROM discs. When your computer is connected to a network, however, you can also store and retrieve information on the hard disks and CD-ROM discs of other computers, use electronic mail, and share computing resources such as printers, modems, and network services.

You can get much of the specific information about the network you want to connect to from the *network administrator*—the person who oversees the network's operation. Before you begin connecting to a network, contact its network administrator.

Your computer can be connected to several kinds of networks including the following:

- **LocalTalk** To connect to a LocalTalk network, you connect a LocalTalk cable to the printer port on your computer.
- **Ethernet** To connect to a high-speed Ethernet network, you need an Ethernet card installed in the communication or PCI (peripheral component interconnect) slot in your computer.
- **Alternative networks such as token ring, ISDN, or Fiber Distributed Data Interface (FDDI)** To connect to any of these networks, you need to install a PCI card for the specific type of network you want to connect to in one of the PCI slots in your computer.

This chapter describes how to connect to and configure your computer on LocalTalk and Ethernet networks. For other network-related information, refer to the appropriate information source.

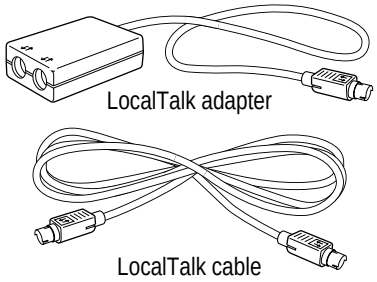
- If your computer is already connected to a network, refer to Macintosh Guide (or Mac OS Guide), available in the Guide (?) menu, for information about printing on a networked printer, accessing information on file servers, and sharing files on your computer with other users. Also, your network administrator can provide information about network software that may be available, such as Internet access and electronic mail.
- If your location does not currently have a network and you are interested in setting one up, refer to a book on Macintosh networking that will help you select and plan a network appropriate for your organization. Many books are available, such as *Planning and Managing AppleTalk Networks*, an Apple book published by Addison-Wesley, which is available at computer bookstores.

Note: With a modem, you can connect to the Internet and other online services. However, with an Ethernet card or LocalTalk connection (described in this chapter), you can also connect your computer to other computers or servers in a local area network. You may also be able to reach the Internet if you connect to a network that has an Internet link. (Access to the Internet over a network may be noticeably faster than access by a modem. For information on using your modem to connect to different services, see Chapter 6.)

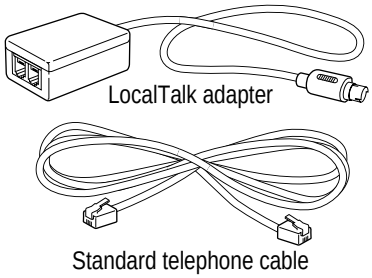
Connecting to a LocalTalk network

To connect your Macintosh to a LocalTalk network, you will need LocalTalk cables and a LocalTalk adapter. In most cases, the Apple LocalTalk Locking Connector Kit DIN-8, available from your Apple-authorized dealer, contains the components you need to connect your Macintosh to an existing LocalTalk network. If your network uses standard telephone cables for your network wiring, obtain an Apple LocalTalk RJ-11 Connector instead.

Apple LocalTalk Locking Connector Kit DIN-8



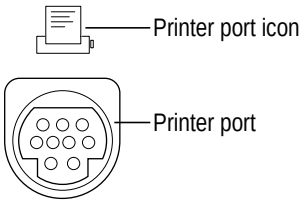
Apple LocalTalk RJ-11 Connector



To connect your Macintosh to a LocalTalk network, do the following:

1. **Shut down your computer.**

2. **Attach the LocalTalk adapter to the printer port or modem port on your computer.**

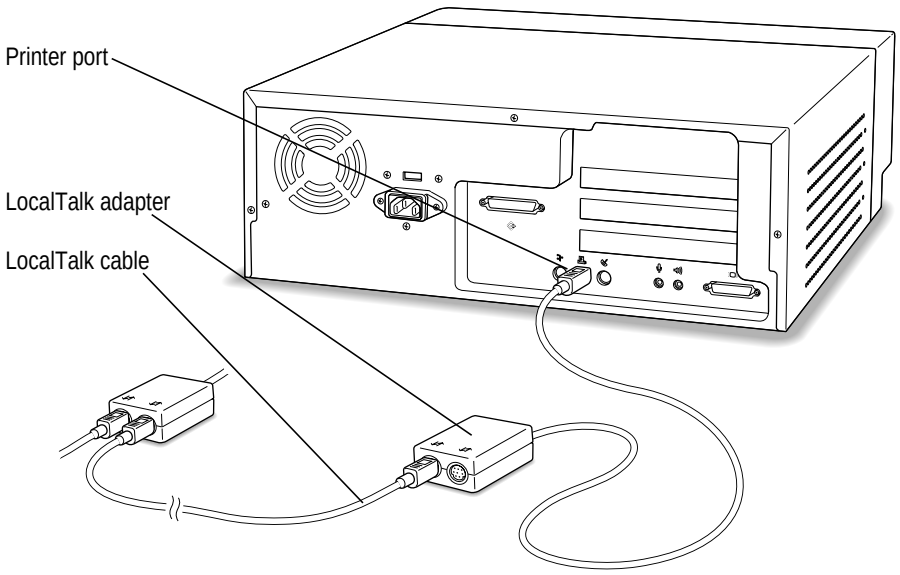


3. **Attach a network cable between the LocalTalk adapter connected to your computer and a LocalTalk adapter on your existing network.**

IMPORTANT While connecting to the middle of the network you may interrupt other users. Check with your network administrator before you connect.

If you connect to the last computer in the network, you need to attach a network terminator to your LocalTalk adapter.

If you are using the Apple LocalTalk Locking Connector Kit DIN-8, use the LocalTalk cable that comes with the kit to connect to a network with LocalTalk cables. If you are using the Apple LocalTalk RJ-11 Connector, use a standard telephone cable with RJ-11 connectors.



4 **Configure your LocalTalk connection following the advice of your network administrator and the instructions in “Configuring Your Network Connection” later in this chapter.**

Connecting to an Ethernet network

Ethernet is a cable system that lets your computer communicate with other computers much faster than it can with LocalTalk cables. To connect your computer to an Ethernet network, you need to do the following:

- Find out from your network administrator what kind of Ethernet network you're connecting to.
- Purchase and install the right kind of Ethernet card and cable. Refer to the next section in this chapter for information about how to choose the correct card for your computer. Refer to Chapter 10, "Installing Expansion Cards and Additional Memory," for instructions on installing cards in your computer.
- Connect the card to the network. Refer to instructions later in this chapter for connecting the card to the type of Ethernet network you have.
- Configure the network connection. Refer to the instructions in "Configuring Your Network Connection," later in this chapter, for information.

Choosing an Ethernet card

If you decide to add an Ethernet card to your computer, the kind of Ethernet card you should purchase depends on two factors—where the card will be installed in your computer and what kind of network you'll be connecting to. Depending on the type of card you install, you may also need an appropriate media adapter.

Where to install the card

The easiest way to add an Ethernet card to your computer is to purchase and install an Ethernet card that uses the computer's PCI (peripheral component interconnect) slot.

Some Ethernet cards, such as the Apple Ethernet CS II card, use the communication slot of your computer. Since your computer comes with an internal modem card already installed in this slot, you will first have to remove the modem card if you want to install an Ethernet card here. (In this case, the internal modem will no longer be available, so you may want to connect an external modem to your computer.)

WARNING Do not connect cables to the back of your computer when the power is on, or you may damage your system.

- If your Ethernet card uses a PCI slot, follow the instructions in "Installing a PCI Card" in the section "Installing an Expansion Card" in Chapter 10, and the instructions that came with the card.
- If your Ethernet card uses the communication slot (often referred to as an Apple Ethernet Comm II card or a CS II card), follow the instructions for removing the modem card and installing the Ethernet card in "Installing a Communication Card" in the section "Installing an Expansion Card" in Chapter 10 and the instructions that came with the card.

Network type

Find out what kind of network you will be connecting to (your network administrator should be able to provide this information). Depending on the kind of network, you will choose among cards that use one of these types of cables:

- thin or thick coaxial (or "coax") cable, also called 10Base-2
- 10Base-T (twisted pair) cable
- fiber-optic media or other standard Ethernet cable

For example, if you know that your Ethernet network uses 10Base-T cables, and you want to continue to use your communication slot for the internal modem card, you would purchase a 10Base-T Ethernet card that fits in a PCI slot.

Media adapters

You can connect *directly* to an Ethernet network using a 10Base-T twisted-pair cable. However, to connect your computer to an Ethernet network using coaxial cables, you need one of the following Ethernet media adapters:

- Apple Ethernet Thin Coax Transceiver
- Apple Ethernet AUI Adapter

See your Apple-authorized dealer for more information on Apple Ethernet media adapters.

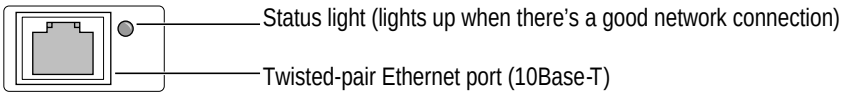
Connecting to a twisted-pair Ethernet network

Follow this procedure to connect your Macintosh to an Ethernet network that uses twisted-pair cable. (You can't connect to an Ethernet network unless you installed an Ethernet card. If your computer didn't come with an Ethernet card already installed, see the information at the beginning of this section, "Connecting to an Ethernet Network.") You need a twisted-pair patch cord with an RJ-45 telephone-style connector, which you plug into a wall plate connected to the existing 10Base-T Ethernet network.

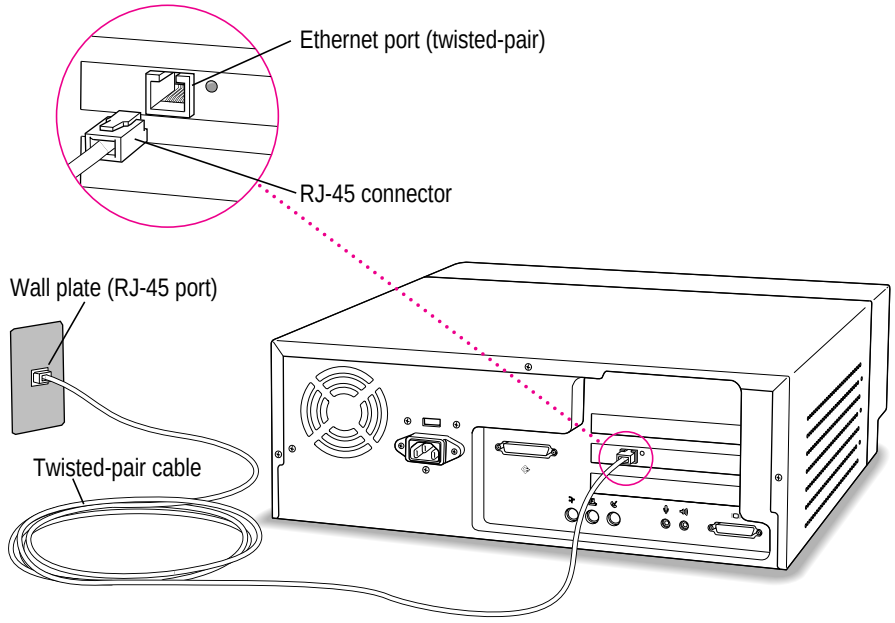
IMPORTANT Be careful not to plug a regular telephone cable into your RJ-45 connector. Although it works very differently, an RJ-45 connector looks very similar to a standard telephone cable. Also, the connectors at the ends of the cables will fit into both telephone and twisted-pair Ethernet ports. Make sure you are using an RJ-45 connector cable.

To connect your Macintosh to a twisted-pair Ethernet network, follow these instructions:

1. **Shut down your computer.**
2. **Plug one end of the twisted-pair patch cord into the 10Base-T Ethernet port on the Ethernet card in your Macintosh.**



3 **Plug the other end of the twisted-pair patch cord into an RJ-45 wall outlet that is connected to a twisted-pair Ethernet network.**



4 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**

Connecting to a thin coaxial Ethernet network

Follow this procedure to connect your Macintosh to an Ethernet network that uses thin coaxial cable. The hardware connection requires an Apple (or Apple-compatible) thin coaxial Ethernet card and a thin coaxial cable.

IMPORTANT You can connect your Macintosh anywhere on the network; however, to do so requires that you temporarily disconnect the network, which will interrupt existing network services and activity temporarily. Consult your network administrator before connecting your computer to the network.

WARNING Do not connect the Ethernet cable directly to the coaxial port on the back of the computer. The cable must first be attached to the T-connector and the T-connector must be attached to the coaxial port.

1 **Shut down your Macintosh.**

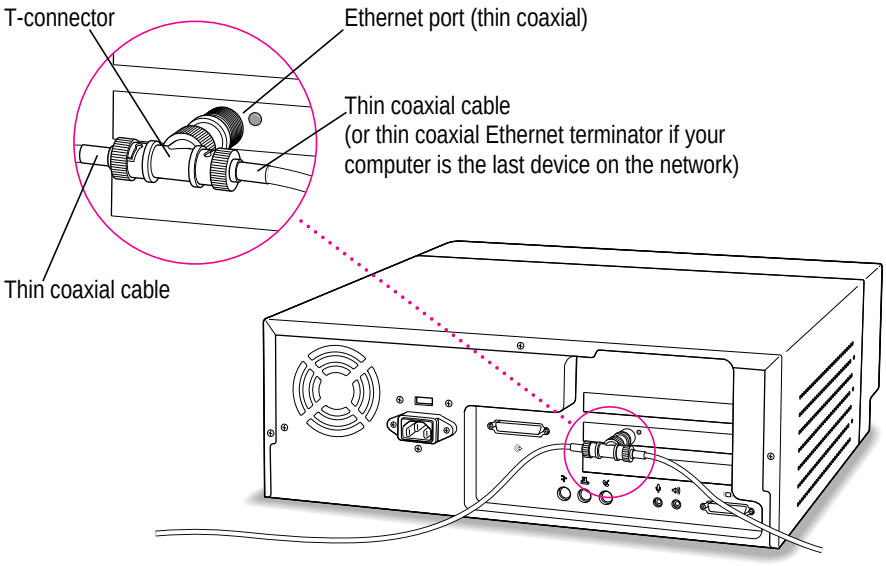
2 **Attach one end of a thin coaxial cable to the T-connector that came with your card.**

Don't attach the T-connector to your computer yet.

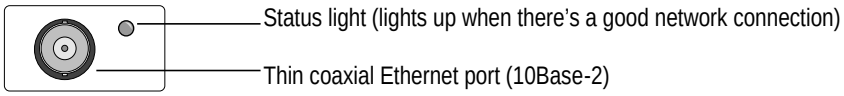
3 **On the computer closest to your computer, detach the network cable (or terminator) from its T-connector.**

This disrupts network services for other users.

4 **Lock the free end of your thin coaxial cable to the T-connector on the other computer.**



5 **If you are adding your computer somewhere in the middle of the network, lock the unattached network cable to your T-connector. Otherwise, lock a terminator to your T-connector.**



This restores network services for other users.

IMPORTANT A thin coaxial network must be terminated at the endpoints to function. An Apple transceiver is self-terminating. A non-Apple transceiver may require a terminator; check the documentation that came with the transceiver.

6 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection" later in this chapter.**

Connecting to other types of Ethernet network

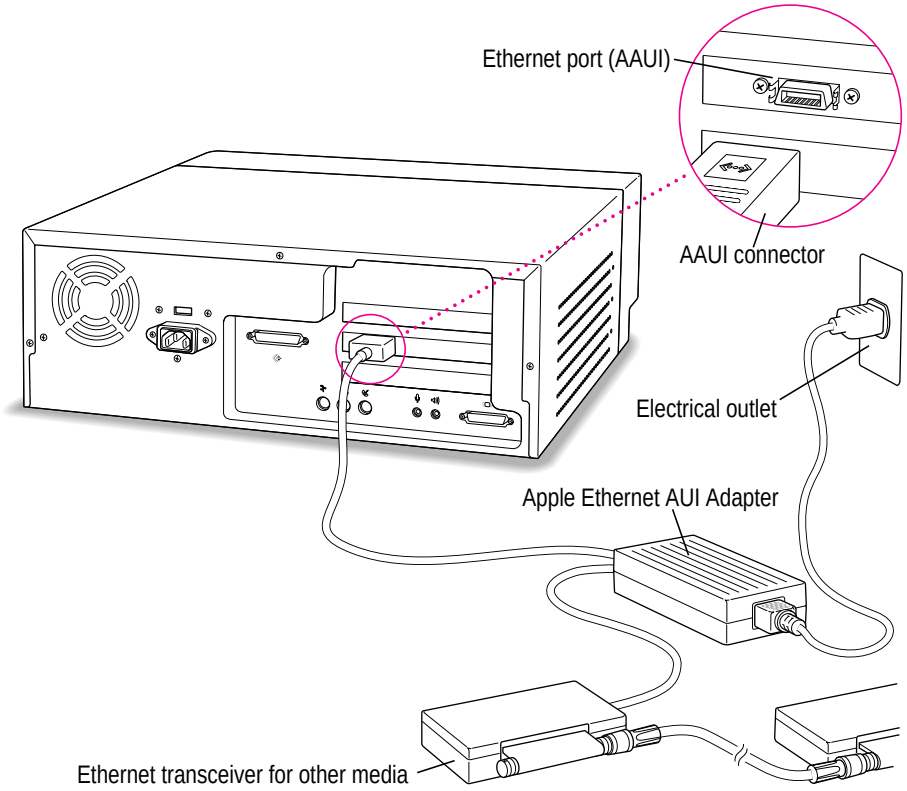
The Apple Ethernet AUI Adapter is a universal adapter that lets you connect your computer to less common types of industry-standard Ethernet media, such as thick coaxial or fiber-optic cable. If you are using the Apple Ethernet AUI Adapter, you also need an Ethernet transceiver for your specific media type; the transceiver must have a standard AUI port on it.

To connect your computer to an Ethernet transceiver for other types of Ethernet media, follow these instructions:

1 **Shut down your computer.**

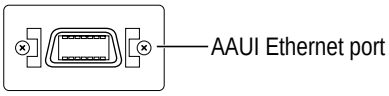
2 **Connect the Ethernet transceiver to the network following the instructions that came with the transceiver.**

3 **Plug the transceiver cable from the Ethernet transceiver into the standard AUI port on the Apple Ethernet AUI Adapter.**



4 **Plug the adapter's power cord into an electrical power outlet.**

5 **Plug the connector on the Apple Ethernet AUI Adapter into the AAUI Ethernet port on your Macintosh.**



6 **Configure your network connection following the advice of your network administrator and the instructions in "Configuring Your Network Connection," next.**

Configuring your network connection

After you physically connect your computer to a LocalTalk or Ethernet network, you need to configure your network connection in the AppleTalk control panel, the TCP/IP control panel, or both.

- You use the AppleTalk control panel to set up your connection to an AppleTalk network (that is, a network using the AppleTalk protocol).
- You use the TCP/IP control panel to set up your connection to the Internet and to a TCP/IP network. (TCP/IP stands for Transmission Control Protocol/Internet Protocol. It is the set of data communication rules followed by networks to communicate with each other on the Internet.)

You may need additional information about the network to which your computer is connected, or about the service through which your computer is connected to the Internet. To get this information, you may need to contact your network administrator or your Internet service provider (ISP).

Configuring your AppleTalk network connection

To configure your AppleTalk network connection, you must specify the port you use to connect your computer to the network.

Additionally, you may need to select the zone in which your computer is located. Larger networks use zones to create groups of computers, printers, servers, and other network devices. For example, a network might have a zone for each floor in an office building. If your network has more than one zone, you can choose the zone in which your computer is located. The zone you choose is automatically selected when you open the Chooser (for example, when you select a network printer), and it is the zone in which other network users can find your computer if you turn on file sharing.

To configure your AppleTalk network connection, follow these steps:

1 **Choose Control Panels from the Apple (🍎) menu.**

2 **Double-click the AppleTalk icon to open it.**

The AppleTalk control panel opens.

3 **Move the pointer to the “Connect via” pop-up menu (if available) and choose the port through which your computer is connected to the network.**

You can connect to an AppleTalk network through an Ethernet port, the printer port, the modem port, or any other ports available on expansion cards installed in your computer. (Any additional ports appear automatically in this pop-up menu.)

Note: If you don’t see a pop-up menu here, this setting has been locked. Contact your network administrator for assistance. (If you don’t have a network administrator, you can use the Administration user mode to unlock this setting. For more information about user modes, click the ? button in the AppleTalk control panel.)

4 **Use the Current Zone pop-up menu (if available) to choose the zone you want.**

If you don’t see a pop-up menu here, either your network has no zones, this setting has been locked, or your network is not set up to allow you to choose a zone. Zones are set up by the network administrator.

5 **Click the close box to close the AppleTalk control panel.**

If you have made configuration changes, a message asks if you want to save them.

If you have changed the port, a message also tells you that the change will interrupt any AppleTalk services that are established. This means that your network services, such as printers and e-mail, may be temporarily unavailable, and you may have to choose a printer and connect to your e-mail service again.

6 **To save your changes, click the Save button.**

Your changes take effect immediately; you do not have to restart your computer.

Getting more information about the AppleTalk control panel

Macintosh Guide contains information about additional capabilities available in the AppleTalk control panel, such as

- using configurations, a way to save different AppleTalk settings and switch among them as desired—for example, if you use your computer with more than one network
- using the User Mode command to change the availability of settings in the AppleTalk control panel
- turning AppleTalk off in order to save RAM in your computer when you are not using an AppleTalk network

For more information about these capabilities, click the ? button in the AppleTalk control panel.

Configuring your TCP/IP network connection

You must properly set up the TCP/IP control panel if your computer is connected to a network that uses TCP/IP standards, such as the Internet.

TCP/IP (Transmission Control Protocol/Internet Protocol) is a set of rules that is applied to data sent and received on the Internet. The rules standardize how data is communicated so that many different kinds of computers can recognize it. TCP/IP protocols can be used with many different types of network equipment and connections. If you don't know whether your network uses TCP/IP, contact your network administrator.

To set up your TCP/IP network connection, you must specify the port you use to connect your computer to the network. TCP/IP networks also require information about your computer's network address. You must enter that information in the TCP/IP control panel or specify a server on which the information can be found. To get this information, check with your network administrator or Internet service provider.

Before you begin

To configure your connection, you need to know the types of servers used on the network, your Internet Protocol (IP) address, and your subnet mask. Your Internet service provider or network administrator can give you the information you need in order to set up your connection.

Setting up

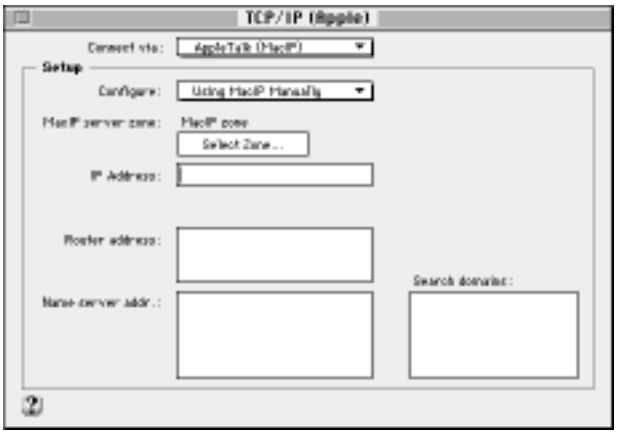
To set up your TCP/IP network connection, follow these steps:

1 **Choose Control Panels from the Apple menu.**

The Control Panels window opens.

2 **Double-click the TCP/IP icon to open it.**

The TCP/IP control panel opens.

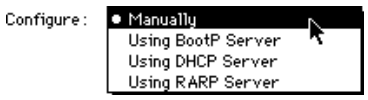


3 **Use the "Connect via" pop-up menu to choose the port through which your computer is connected to the network.**

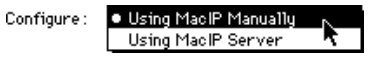
Note: If you don't see the pop-up menu or other settings described in this section, the TCP/IP configuration may have been locked. Contact your network administrator for assistance. (If you don't have a network administrator, you can use the Administration user mode to unlock this setting. For more information about user modes, click the ? button in the TCP/IP control panel.)

4 **Use the Configure pop-up menu to choose a configuration method.**

If you are connected using Ethernet, the pop-up menu looks like this:



If you are connected using AppleTalk (MacIP), the pop-up menu looks like this:



Whether you proceed to step 5 or step 6 depends on whether you are configuring your network manually or automatically.

To use a TCP/IP network, your computer must have an IP (Internet Protocol) address, and it often must have a subnet mask number. Your network address and subnet mask number identify your computer's location on the network. This information can be entered manually or obtained automatically from a server. (An address entered manually is called a static IP address; one obtained automatically is known as a dynamic IP address.) Before you set up your TCP/IP network connection, obtain your IP address and subnet mask number from your Internet service provider or network administrator. If these can be obtained automatically from a server, you need to know what type of server. Here are the types that will appear in the Configuration pop-up menu in the instructions that follow:

- **BootP** A Boot Protocol server automatically provides the TCP/IP setup information you need.
- **RARP** A Reverse Address Resolution Protocol server provides the IP address for your computer, but you must provide the rest of the information manually.
- **DHCP** A Dynamic Host Configuration Protocol server automatically provides all the TCP/IP setup information you need.
- **MacIP** A Macintosh Internet Protocol provides all the TCP/IP setup information you need, but you need to know the zone where the MacIP server is located. (MacIP is also a protocol for sending Internet-style packets of information over an AppleTalk network.)

5 **If you are configuring your network connection manually, type the information provided by your network administrator or Internet service provider into the appropriate boxes.**

You must specify an IP address, the individual address assigned to each computer on the network. You may also need to enter a subnet mask number, router address, and other information. A subnet mask is a security item that keeps your computer from identifying other computers' IP addresses. A router address is the address of the computer with which your computer exchanges data over the network.

6 **If your network configuration will be provided automatically by a server, do one of the following:**

- If you are using a BootP server or DHCP server, skip to step 8. The server usually provides all the configuration information needed by TCP/IP.
- If you are using a RARP server, you may need to type additional information provided by your network administrator or Internet service provider into the appropriate boxes. If so, enter the information now.
- If you are using a MacIP server, click Select Zone. In the dialog box that appears, choose the zone that contains the MacIP server you want to use and then click OK. If you are connecting with Apple Remote Access (ARA) you must open a connection before you can select a zone.

7 **If you are configuring manually, get the Name Server Address from your Internet service provider or network administrator.**

Many networks provide more than one Name Server Address.

8 **Click the close box to close the TCP/IP control panel.**

If you have made configuration changes, a message asks if you want to save them. If you have changed the port, a message also tells you that the change will interrupt any connections to TCP/IP services. For example, you may have to quit and reopen a Web browser or e-mail software after saving changes.

9 **To save your changes, click the Save button.**

Your changes take effect immediately; you do not have to restart your computer.

Getting more information about the TCP/IP control panel

Macintosh Guide contains information about additional capabilities available in the TCP/IP control panel, such as

- using configurations, a way to save different TCP/IP settings and switch among them as desired
- using the User Mode command to determine the availability of settings in the TCP/IP control panel.
- turning TCP/IP off to save RAM when you are not using a TCP/IP-based network

For more information about these capabilities, click the ? button in the TCP/IP control panel.

Consult this chapter if you have problems with your computer that require you to reinstall the computer's software.

8 Reinstalling Your Computer's Software

System software is the set of programs and other files that your computer uses to start itself up, keep track of your files, and run the application programs you use. System software is kept in the System Folder. When you turn on your computer, it looks for a startup disk, which is a disk that contains the system software. The startup disk is usually the hard disk that's inside your computer, though another hard disk, a floppy disk, or a compact disc (CD) can also be a startup disk.

When should you reinstall system software?

Your Macintosh came with all the necessary system software installed on its internal hard disk, so you don't need to install system software on that disk unless you encounter software problems.

If you have a new hard disk or a newly initialized hard disk that doesn't contain system software, or if you want to upgrade to a more recent version of system software on a hard disk, you need to install system software. Follow the instructions in this chapter to reinstall system software.

If your hard disk already has system software installed on it but there is a problem with the disk or the software, you may see this icon in the middle of the screen:

If this icon appears, first try testing your startup hard disk and repairing any damage. To do this, follow the instructions in “Repairing a Damaged Disk” in Chapter 9. If repairing the disk doesn’t help, follow the instructions in the next section.

When to use the restore CDs that came with your computer

You reinstall your computer’s software by using the various CDs that came with your computer.

This chapter describes three ways to use the restore CDs:

- You can reinstall (restore) just the system software—the files needed to run your computer—using the Restore System Software program.
- You can reinstall (restore) all the software that came with your computer by using the Restore All Software program.
- You can copy one or more individual files from the CD-ROM disc to your hard disk.

You need to use the *Macintosh Restore CD* to reinstall the system software if

- your computer will not start
- a file or an application program is missing or damaged

The “If You Still Have Problems” section at the end of this chapter tells you what to do if the CD-ROM disc does not solve the problems with your computer.

Using the CD-ROM disc to start up your computer

Before you reinstall software onto your hard disk, you need to start up your computer with the *Macintosh Restore CD*. The procedure for starting up from the CD-ROM disc varies depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your computer.

If you see a blinking question mark on the screen

The blinking question mark means that your computer is unable to find usable system software on your hard disk.

Note: If you don’t see a blinking question mark, go to the next section, “If You See the Macintosh Desktop.”

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Restore CD* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.

3 **To close the tray, push the tray in or press the Open/Close button.**

Your Macintosh recognizes the CD-ROM disc as a startup disk, and in a few seconds the desktop below appears.

Your screen may look slightly different from this one.

Now continue with the steps in “Reinstalling Your System Software” or “Reinstalling All Your Original Software.”

If you see the Macintosh desktop

1 **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**

2 **Place the *Macintosh Restore CD* in the tray with the disc label facing up.**

Make sure the disc is lying flat in the tray.

3 **To close the tray, push the tray in or press the Open/Close button.**

4 **Hold down the C key on your keyboard while you choose Restart from the Special menu and wait for the message “Welcome to Macintosh” to appear.**

5 **When you see the “Welcome to Macintosh” message, release the C key.**

In a few seconds the desktop below appears. Your computer is now running the system software that’s on the *Macintosh Restore CD*.

Your screen may look slightly different from this one.

Now continue with the steps in “Reinstalling Your System Software” or “Reinstalling All Your Original Software.”

Reinstalling your computer’s software

Software can sometimes develop problems and may need to be replaced. Restore System Software is a program that reinstalls the system software that was on your computer when you purchased it. You might also want to reinstall all the software that originally came with your computer. If that’s the case, go to the next section, “Reinstalling All Your Original Software.”

Reinstalling system software only

When you use the Restore System Software program, only system software (all the Apple programs that run the computer) is reinstalled. All other programs and documents remain on your hard disk.

1 **Start up your computer using the *Macintosh Restore CD.***

For instructions, see the previous section, “Using the CD-ROM Disc to Start Up Your Computer.”

2 **Locate the Restore System Software icon in the Launcher window.**

3 **Click the Restore System Software icon to open it.**

In a moment you’ll see this screen:

4 **Click the Continue button, or press the Return key on your keyboard.**

Restoring begins. A status box appears and keeps you informed of progress during the restoration, which takes several minutes.

5 **When you see a message that the software was restored successfully, click the Restart button while you press the Open/Close button on the CD-ROM tray.**

While the computer restarts, continue to press the Open/Close button on the CD-ROM tray until it opens and you can remove the CD-ROM disc.

If the tray doesn't open, try again: choose Restart from the Special menu and immediately press the Open/Close button until the tray opens.

In a few moments, the normal Macintosh desktop with the Launcher appears on your screen. You have successfully restored system software on your hard disk.

Your screen may look slightly different from this one.

If your computer starts up properly but a program is damaged or missing, you may want to run the Restore All Software program from the *Macintosh Restore CD* and other restore CDs. See the instructions in the next section, "Reinstalling All Your Original Software."

Reinstalling all your original software

If you want to restore all your system software and application programs to the state they were in when you first purchased your computer, follow these instructions.

Note: If you have installed newer versions of programs that came with your computer, you may need to reinstall the newer versions after you use the Restore All Software program. All documents and programs that *didn't* come with your computer (all the files that you have added to your hard disk, such as letters and reports) remain on your hard disk when you reinstall your other software using the Restore All Software program. Programs that you added to your computer after you bought it do not need to be reinstalled.

1 **Using the *Macintosh Restore CD*, start up your computer by holding down the C key on your keyboard while you choose Restart from the Special menu.**

For instructions, see "Using the CD-ROM Disc to Start Up Your Computer," earlier in this chapter.

2 **Click the Restore All Software icon in the Launcher window.**

3 **In the dialog box that appears, click the Continue button or press the Return key on your keyboard.**

Restoring begins. A status box appears and keeps you informed of progress during the restoration, which takes several minutes.

4 **When you see a message that the software was restored successfully, click the Restart button while you press the Open/Close button on the CD-ROM tray.**

While the computer restarts, continue to press the Open/Close button on the CD-ROM tray until it opens and you can remove the CD-ROM disc.

If the tray doesn't open, try again: choose Restart from the Special menu and immediately press the Open/Close button until the tray opens.

In a few moments, the normal Macintosh desktop with the Launcher appears on your screen. You have successfully restored all your original software on your hard disk.

Your screen may look slightly different from this one.

5 **If other CD-ROM discs came with your computer, start up from each of them while holding down the C key.**

This will restore other software not included on the *Macintosh Restore CD*. Make sure to follow the installation instructions in any Read Me files that appear when you open the CD-ROM disc icon.

Copying files from the *Macintosh Restore CD* to your hard disk

The *Macintosh Restore CD* has a folder on it named Hard Disk Files. You can copy any file in this folder by dragging the file to your hard disk. The Hard Disk Files folder contains these folders:

- System Folder files (contains system software)
- Apple Extras files (contains copies of Apple software)
- Applications files (contains copies of software not published by Apple)
- Documents files (contains various documents)

For example, if your computer is working but you have inadvertently deleted the SimpleText application program from your hard disk, you can copy the SimpleText program from the *Macintosh Restore CD* without using the Restore All Software program. (SimpleText is in the Apple Extras folder on the *Macintosh Restore CD*.)

Note: Your *Macintosh Restore CD* may contain other programs, such as Drive Setup and Disk First Aid. These programs are used for testing and repairing disks, as described in the section "Repairing a Damaged Disk" in Chapter 9.

For information about programs on the *Macintosh Restore CD*, see any Read Me files that may accompany them on the CD-ROM disc.

Protect the information on your hard disk

If your hard disk becomes damaged, you can use the *Macintosh Restore CD* to reinstall the software that came with your computer—but the personalized documents that you have created could be lost if you don't keep backup copies. To avoid this loss, copy your documents frequently onto backup disks. See the section "Protecting the Information on a Disk" in Chapter 4.

Create a startup floppy disk

The *Macintosh Restore CD* contains a disk copy program (in the Disk Images folder) that enables you to create a floppy disk that you can use to start up your computer. You may want to create a startup floppy disk to use in case you are unable at a future time to start up from the CD-ROM disc.

See the text file in the Disk Images folder for instructions on using the disk copy program to make a startup floppy disk.

If you still have problems

If you don't see the Macintosh desktop on your screen, or if the Macintosh still does not start up properly, see the section "Repairing a Damaged Disk" in Chapter 9.

If you are able to repair the hard disk, try again to restore the information on it by following the instructions in the section "Reinstalling All Your Original Software," earlier in this chapter,

If you are not able to repair the hard disk, call Apple for help. See the service and support information that came with your computer.

Consult this chapter if you experience problems using your computer.

9 Troubleshooting

When you have questions

If you want to know how to do a particular task with your computer, refer to Macintosh Guide (or Mac OS Guide) in the Guide (?) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

If you have trouble

While you're using your computer, you may occasionally see a bomb icon or an error message, or the pointer (↖) may "freeze" on the screen. If you have trouble with your computer, take a few minutes to read the information in this chapter. If your problem is related to a particular procedure, you should also look for information on that procedure in Macintosh Guide, available in the Guide (?) menu. For additional troubleshooting information and a list of common questions relating to your system software, see the "Troubleshooting" topic area of Macintosh Guide.

If you are unable to access Macintosh Guide (for example, if your screen is "frozen"), refer to this chapter to see if you can resolve the problem.

WARNING If you have a problem with your computer and nothing presented in this chapter solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the computer yourself, any damage you may cause to the computer will not be covered by the limited warranty on your computer. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Take your time

When you see an error message, you don't have to take action immediately. The message stays on the screen until you click the OK (or Restart) button or turn off the Macintosh.

To help diagnose and correct the problem, follow the suggestions in this subsection. Gather as much information on the situation as you can. Then follow the instructions in the next subsection, "Start Over by Restarting Your Computer."

- Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen. List the programs you were using and the names of any items you know have been added to the System Folder since the system software was installed. This information will help a service person diagnose the problem. (It is helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic area of Macintosh Guide, available in the Guide [?] menu.)
- Check the screen for any clues. Is a menu selected? What programs and document icons are open? Note anything else that seems relevant.
- If you were typing text and were not able to save it before the problem occurred, you can write down the parts of the text still visible on the screen so that some of your work will be easy to replace.
- Ask other Macintosh users about the problem you're having; they may have a solution for it.

If you need repair service, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

If you know the problem is with a program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.

Start over by restarting your computer

Often you can eliminate a problem simply by clearing the computer's memory and starting over.

If you can, save any open documents before restarting your Macintosh. If your system is frozen and does not respond to anything you do, or if you have a "bomb" message on the screen, saving may not be possible. You can try pressing ⌘-Option-Esc to quit the program in use when the problem occurred; if this works, you can then save the documents open in other programs before restarting. Restart the computer immediately after you save your documents—quitting a program using ⌘-Option-Esc may leave corrupted data in the computer's memory. This corrupted data is erased when you restart the computer.

Note: Use this key combination to force a program to quit only when you can't choose Quit from the File menu.

To restart your Macintosh, try the following steps:

1. **If you can, choose Restart from the Special menu or from the dialog box that's on screen.**

   Dialog boxes contain messages from the computer. If something goes wrong, a message may appear on the screen asking you to restart the computer.

2. **If you can't choose Restart, press the Power key (marked with a ◁) on the keyboard.**

3. **If the Power key on the keyboard doesn't work, hold down the ⌘ and Control keys while you press the Power key (◁).**

   This key combination restarts the computer. (Use this key combination only when you can't choose Restart from the Special menu or restart the computer using the Power key.)

4 **If your computer still doesn't restart, turn it off by pressing the power button (⏻) on the front of the computer. Wait at least 30 seconds, then turn the computer on again by pressing the Power key (marked with a ◁) on the keyboard.**

If you suspect that the problem is with other equipment, such as a printer or an external hard disk that's attached to your computer, turn that equipment off for 30 seconds or longer. Then turn it on again and restart the Macintosh.

Rebuild your desktop

A process known as "rebuilding the desktop" helps your Macintosh keep track of data on your startup disks. It's a good idea to rebuild your desktop once a month or so.

Rebuilding your desktop can solve a number of problems. For example, when application documents are no longer represented by application-specific icons (and are instead represented by generic icons on the desktop), rebuilding the desktop fixes the problem. Afterward, appropriate icons should appear for all documents.

Some extensions may interfere with rebuilding your desktop. To prevent problems, you'll need to turn off all extensions except Macintosh Easy Open before you rebuild your desktop. When you finish rebuilding the desktop, turn the extensions you normally use back on.

To rebuild the desktop of a startup disk, follow these steps:

1. **Open the Extensions Manager control panel by choosing Extensions Manager from the Control Panels submenu of the Apple (🍎) menu.**

2. **From the Sets pop-up menu, choose Save Set.**

3. **In the Save Set dialog box, type a name for your currently selected extensions (for example, “My Extensions”) and click OK. The name of your set is added to the Sets pop-up menu.**

   This saves your current set of extensions.

4. **Choose All Off from the Sets pop-up menu to turn off all extensions.**

5. **Turn on Macintosh Easy Open by clicking it in the list so that a checkmark appears beside it.**

   You can find Macintosh Easy Open by scrolling down the list of extensions. Macintosh Easy Open appears under the heading “Control Panels.”

6. **Restart your computer while holding down the Command (⌘) and Option keys.**

   Hold down the ⌘ and Option keys until you see the dialog box that asks if you’re sure you want to rebuild your desktop file. When the dialog box appears, you can release the keys.

7. **Click OK.**

   The desktop starts rebuilding.

   IMPORTANT Do not stop the desktop-rebuilding process. Doing so could damage your system files.

8. **Open the Extensions Manager control panel by choosing Control Panels from the Apple (🍎) menu. When the Control Panels window appears, double-click the Extensions Manager icon.**

9. **From the Sets pop-up menu, choose the name you gave your set of extensions in step 3.**

   This turns your original set of extensions back on.

10. **Restart your computer to activate the extensions.**

Solutions to common problems with your computer

This section contains descriptions of problems you could experience with your computer. Some problems may be caused by your CD-ROM drive, so if you don't find your problem included here, be sure to check the section "Solutions to CD-ROM Problems" later in this chapter.

The computer is turned on but the screen is dark.

One of the following is probably the cause:

- You have a screen saver program that darkens the screen when the computer has not been used for a certain period of time.

  Press a key or move the mouse to turn off the screen saver.

- Your computer has gone to sleep due to inactivity. "Wake it up" by pressing the Power key (marked with a ◁ on the keyboard).

- The monitor's brightness control (☼) is not adjusted properly.

  Check the monitor's brightness control and turn it up if necessary.

- The Macintosh or the monitor is not getting power.

  Check that the computer's power cord is firmly connected to the computer and plugged into a grounded electrical outlet, and that the outlet has power. Check that the monitor is plugged in and turned on, and that the monitor cable is firmly connected to both the computer and the monitor.

If you are displaying video from your computer on a television screen, it is normal for your computer monitor to be dark.

The computer's clock keeps time inaccurately.

Your computer has a clock that runs continuously. When the computer is turned off, a battery keeps the clock running. If your clock begins to keep time inaccurately, have an Apple-authorized service provider replace the battery. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

WARNING If the clock begins to lose accuracy, see your Apple-authorized dealer or service provider for a battery replacement. Do not attempt to replace the clock battery yourself.

You inadvertently delete a program from your computer's hard disk.

You can replace any of the software that came with your computer by dragging it to the hard disk from the *Macintosh Restore CD* or any other restore CD that came with the computer. See the section "Installing Applications From a CD-ROM Disc" in "Installing Application Programs" in Chapter 4.

When you start up, a disk icon with a blinking question mark appears in the middle of the screen.

This icon indicates that your Macintosh cannot find the system software it needs to start up. One of the following is probably the cause:

- Your computer may be having a problem recognizing external SCSI (Small Computer System Interface) equipment, such as hard disks, CD-ROM drives, and scanners that you may have connected to your computer.

  Shut down your computer, turn off all external SCSI equipment, and disconnect the first SCSI device in the chain from your computer's SCSI port. Then restart the computer. If the computer starts up after you disconnect your SCSI equipment, refer both to the manuals that came with the equipment and Chapter 3 of this manual, which has information on the proper way to connect SCSI equipment and assign SCSI ID numbers.

  If you have a printer connected to your computer's SCSI port, make sure your printer is connected properly. Most printers connect to the printer port, not the SCSI port. Check the manuals that came with your printer for information on how to connect it properly.

- System software is not installed on the startup hard disk, the system software is damaged, or the hard disk is not working properly.

  Start up your computer using the *Macintosh Restore CD*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section "Starting Up From the *Macintosh Restore CD*" later in this chapter if you need more help.) Then follow the instructions in "Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

If repairing the disk doesn't help, follow the instructions in Chapter 8, "Reinstalling Your Computer's Software," to reinstall system software on your startup hard disk.

A disk icon with an X appears in the middle of the screen and a floppy disk is ejected from the disk drive.

This icon indicates that the floppy disk you tried to start up from is not a startup disk. (When you turn on your computer, it looks first in the floppy disk drive for a disk containing system software. If the disk in the drive does not contain system software, the computer ejects the disk and looks on its internal hard disk for system software.)

Wait a few seconds. The computer should start up from its internal hard disk. Make sure you insert floppy disks only after the computer has begun starting up.

A "sad Macintosh" icon appears and the computer won't start up.

This icon indicates that your Macintosh cannot start up because of a problem with the system software or the computer hardware.

Eject any floppy disks by turning off the computer and then holding down the mouse button while you turn the computer on again. Try starting up with the *Macintosh Restore CD*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section "Starting Up From the *Macintosh Restore CD*" later in this chapter if you need more help.) If the "sad Macintosh" icon appears again, consult the service and support information that came with your computer for information on contacting an Apple-authorized service provider or Apple for assistance.

The hard disk icon does not appear on the desktop.

If you don't see a hard disk icon on the desktop, try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is on the *Macintosh Restore CD* that came with your computer. For instructions on using Drive Setup, follow the instructions in "Checking for Damage on Your Hard Disk" in the section "Repairing a Damaged Disk" later in this chapter.
- If the hard disk is internal, shut down your computer, wait at least 30 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- Check the ID numbers of all SCSI equipment (anything connected to the SCSI port [⌖]) connected to your computer. Each SCSI device must have its own unique ID number. See the manuals that came with your SCSI equipment, in conjunction with Chapter 3 in this manual, for information on setting SCSI ID numbers.
- If the hard disk is your startup disk, start your computer with the *Macintosh Restore CD*. Do this by inserting the CD-ROM disc into the CD-ROM drive and holding down the C key while you restart the computer. (See the section "Starting Up From the *Macintosh Restore CD*" later in this chapter if you need more help.) Then follow the instructions in "Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

  If repairing the disk doesn't help, follow the instructions in Chapter 8, "Reinstalling Your Computer's Software," to reinstall system software on your startup hard disk.

Icons do not appear correctly on your screen.

You need to rebuild the desktop—a process that helps your Macintosh keep track of files and folders on your hard disk. For instructions, see "Rebuild Your Desktop" in the section "If You Have Trouble" earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, try rebuilding a second time.

Your Macintosh can't read a floppy disk.

If you see a message that a floppy disk is unreadable, try one of the following:

- If the disk has never been used, you may simply need to initialize it—that is, prepare it for use. For instructions, see the "Disks" topic area of Macintosh Guide, available in the Guide (?) menu.
- The disk may be damaged. See "Repairing a Damaged Disk" later in this chapter for information on testing and repairing disks.
- The disk may have been formatted for use on another kind of computer. You may be able to use a program that lets you work with such disks on your Macintosh.

If you are trying unsuccessfully to use a DOS floppy disk, consider the following:

- When formatting floppy disks on a DOS computer for use in a Macintosh, you need to format standard double-sided disks as 720K disks and high-density disks as 1440K disks. Double-sided disks formatted in 1440K format and high-density disks formatted in 720K format may not work in a Macintosh.

  If you think your DOS floppy disk might have a format that doesn't work in a Macintosh, use a DOS computer to copy the contents of the disk onto a properly formatted disk.
- Make sure the PC Exchange control panel is in the Control Panels folder (in the Apple [] menu) and that it is turned on. To turn on PC Exchange, open the Extensions Manager control panel and click the PC Exchange item (under the Control Panels heading) to make a checkmark appear. Then restart your computer.

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

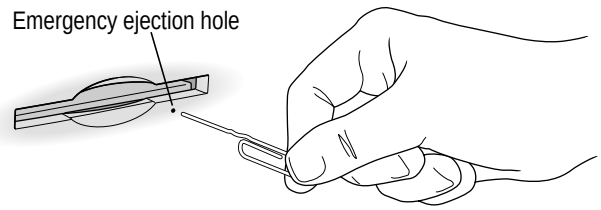
To return to the Macintosh desktop, choose Shut Down from the Special menu. When your computer is off, restart the computer, then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc. Close the tray. Then start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

You can't eject a floppy disk.

For instructions on ejecting any disk (a floppy disk, a CD-ROM disc, or a removable media disk), see the "Disks" topic area of Macintosh Guide, available in the Guide (?) menu. If you can't eject a floppy disk in the usual ways (by selecting the disk's icon and choosing Eject Disk from the Special menu or by dragging the disk's icon to the Trash), try the following in order:

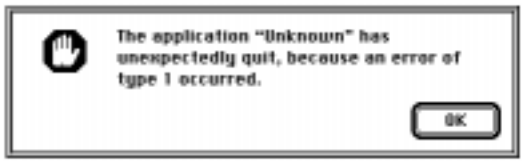
- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Turn off the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



If none of these solutions works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

For instructions on ejecting any disk (a floppy disk, a CD-ROM disc, or a removable media disk), see the "Disks" topic area of Macintosh Guide, available in the Guide (?) menu.

You can't start an application program or it quits unexpectedly. Or, when you try to open a program, you see a message that not enough memory is available.



One of the following is probably the cause:

- The computer ran out of memory.

  Quit the programs that you have open and then open the program you want to use, or restart your Macintosh.

  Use the Memory control panel to turn on virtual memory. For more information on virtual memory, see the "Memory" topic area of Macintosh Guide, available in the Guide (?) menu.

- The program needs more memory.

  Use the program's Info window to give it more memory. For more information on increasing a program's memory, see the "Memory" topic area of Macintosh Guide, available in the Guide (?) menu.

- Sometimes incompatible system extensions or control panels can cause software problems. Restart while holding down the Shift key to temporarily turn off all system extensions.

  If your program works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn on individual extensions and control panels. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (?) menu.

  If your program performs better when a particular extension or control panel is turned off, contact the software's manufacturer for information or an upgrade.

A dialog box with a bomb appears.

There is a software problem.

- Write down what you were doing when the message appeared, and write down the text of the message.
- Restart your computer. (See “Start Over by Restarting Your Computer” in the section “If You Have Trouble” earlier in this chapter.) Most software problems are temporary, and restarting usually corrects the problem.
- If the problem recurs, check the startup disk and application program you were using when the dialog box appeared. Make sure that all programs, desk accessories, and system extensions you’re using are compatible with the system software (as described in the next paragraph). Reinstalling the system software may correct the problem. See Chapter 8, “Reinstalling Your Computer’s Software.”
- Sometimes incompatible system extensions or control panels can cause system software problems. Restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the “Customizing Your Computer” topic area of Macintosh Guide, available in the Guide (?) menu.

  If your computer performs better when a particular extension or control panel is turned off, contact the software’s manufacturer for information or an upgrade.
- If the problem recurs, you may need to reinstall system software. See Chapter 8, “Reinstalling Your Computer’s Software,” for instructions.

- If the problem only occurs in one application program, try reinstalling the program from the original disks. If reinstalling doesn't solve the problem, contact the manufacturer of the program.

The pointer (↖) doesn't move when you move the mouse.

One of the following situations is probably the cause.

- There is a software problem. Try the following:

  Press ⌘-Option-Esc to quit the application program in use when the problem occurred. If this works, you can save the documents open in other programs before restarting.

  Restart your computer. See "Start Over by Restarting Your Computer" in the section "If You Have Trouble" earlier in this chapter for instructions.
- Follow the suggestions in the previous entry, "A Dialog Box With a Bomb Appears."
- The mouse or keyboard is not connected properly.

  IMPORTANT Do not connect or disconnect the mouse while the computer is turned on. You may damage your computer.

  Turn off the computer by pressing the Power key (marked with a ◁) and then pressing Return to choose Shut Down. If that doesn't work, turn off the computer by pressing the power button (⏻) on the front of the computer. With the computer off, check that the mouse and keyboard cables are connected properly. Then restart the computer.
- Signals from the mouse are not reaching the computer, either because the mouse needs cleaning or because there is something wrong with it.

  Clean the mouse according to the instructions in Appendix A of this manual.

  If you have another mouse or pointing device, try connecting and using it. (Turn the computer off before connecting it.) If the new device works, there is probably something wrong with the mouse you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- You haven't selected any text or set the insertion point (|).

  Make sure the program you want to type in is the active program. Then place the pointer (↖) in the active window and click to set an insertion point (|) or drag to select text (if you want to replace the text with your typing).

- If the computer beeps every time you press a key, Easy Access is probably turned on. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click the checkmark next to Easy Access to remove the checkmark and to turn off Easy Access. Then restart your computer.

- The keyboard is not connected properly.

  Turn off the computer by pressing the power button (⏻) on the front of the computer. With the computer off, check that the keyboard cable is connected properly at both ends.

- Some system software features are turned on that affect the way the keyboard works.

  Open Easy Access from the control panels listed under the Apple (🍎) menu and turn off Sticky Keys, Slow Keys, and Mouse Keys.

- There is a software problem.

  Restart your Macintosh. For instructions, see "Start Over by Restarting Your Computer" in the section "If You Have Trouble" earlier in this chapter.

  Check the startup disk and application program you were using when the problem occurred. To check that the programs and the system extensions you're using are compatible with the system software, restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels that may be causing the problem. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (?) menu.

If the problem recurs, you may need to reinstall system software. See Chapter 8, “Reinstalling Your Computer’s Software,” for instructions.

- The keyboard is damaged.

  If you have access to another keyboard, try using it instead. (Turn the computer off before connecting it.) If the new keyboard works, there is probably something wrong with the original keyboard.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

You can’t open a document, or you see a message that an application program can’t be found.

- Some documents can be opened by more than one application program. Try starting a program that you think might be able to open the document, then choose Open from the program’s File menu to try to open the document.
- Purchase and install the correct software to use the document, or find out if the creator of the document can convert it to a form that one of your programs can use.
- Don’t try to open the files in your System Folder. Most of the files in your System Folder are used by your computer for internal purposes and are not intended to be opened.
- Rebuild your desktop. Follow the instructions in “Rebuild Your Desktop” in the section “If You Have Trouble” earlier in this chapter.
- If the document is from a DOS computer, use the PC Exchange control panel (in the Control Panels folder in the Apple [] menu) to specify which Macintosh program will open the document. For information about working with DOS documents on your Macintosh, see the information about DOS in Macintosh Guide, available in the Guide (?) menu.

Your computer won’t restart, and a CD-ROM disc is in the CD-ROM drive.

Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

You experience problems using a document from a DOS computer.

If you can't open a DOS document using a Macintosh program, try the following:

- Open the document from within the program by choosing Open in the program's File menu.
- Use the PC Exchange control panel (in the Control Panels folder in the Apple [] menu) to specify which Macintosh program will open the document.

If a DOS document is displayed incorrectly, or you see strange codes or characters in the document, try one of the following:

- Your application program may have special procedures for opening and saving documents with different file formats. See the information that came with your program, or call the program's publisher.
- Try opening the document in another program.

Note: Some characters that can be displayed on the Macintosh are not accurately displayed on DOS computers.

For more information about working with DOS documents on your Macintosh, see the information about using DOS in Macintosh Guide, available in the Guide (?) menu.

You see a message that your application program can't be opened because a file can't be found.

Macintosh programs designed specifically for the PowerPC microprocessor (also called "native" applications) use special files called *shared libraries*. Any necessary shared libraries should be installed automatically when you install these special Macintosh programs.

Follow the directions that came with your program to reinstall the program. If the shared library is still missing, contact the software program's manufacturer for assistance.

You experience problems using an older Macintosh program.

Some older Macintosh programs are not completely compatible with Macintosh computers that have the PowerPC microprocessor.

- Open the Memory control panel (in the Control Panels folder in the Apple [] menu) and turn off Modern Memory Manager.
- If that doesn't work, contact the program's publisher to see if an upgrade is available.

You can't record sound using an external microphone or the microphone built into your monitor.

- When you want to record sound, make sure your sound input source is set to External Microphone. Open the Monitors & Sound control panel in the Control Panels folder in the Apple () menu, click the Sound icon, and choose External Microphone from the Sound Input pop-up menu.
- If you're using your monitor's built-in microphone to record, use the Monitors & Sound control panel to make the monitor's speakers mute. In the same control panel, make sure that the sound input is set to the monitor's built-in microphone.

For additional help, see the "Sound" topic area of Macintosh Guide, available in the Guide (?) menu in the upper-right corner of your screen.

You can't quit (get out of) one of the programs you opened in the Launcher.

Some programs in the Learning section of the Launcher (when you press the Learning category button) are self-running demos. If you can't get out of one of the programs or demos, try the following:

- Look again to see if you can find a quit button or other quitting option.
- Hold down the ⌘ key on your keyboard, and then, while keeping this key held down, press the period key.
- While holding down the ⌘ key on your keyboard, press the letter Q.
- Press the Power key (marked with a ◁) on your keyboard and then press Return to shut down.
- Restart your computer by holding down the ⌘ and Control keys while you press the Power key (marked with a ◁).

Your screen displays a right angle-bracket prompt (>).

If you inadvertently press the ⌘ and Power keys at the same time, you may get a right angle-bracket (>) prompt instead of the usual Macintosh desktop on your screen. To return to the Macintosh desktop, type the letter G and press Return.

Solutions to CD-ROM problems

Problems using the optional CD-ROM drive

The CD-ROM drive icon does not appear on the screen.

- If you have SCSI devices (anything connected to the SCSI port [⇳]) attached to your computer, make sure that each device has a unique SCSI ID number. Refer to the documentation that came with your SCSI devices if you need to reset SCSI ID numbers.
- If you reinstalled the CD-ROM software, make sure to restart your computer afterward.
- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click to put a checkmark next to Apple CD-ROM. Then restart your computer.
- If you installed a CD-ROM drive after you bought your computer, make sure the CD-ROM software that came with the drive is installed. See the manual that came with the CD-ROM drive for software installation instructions. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

You've just ejected a CD, but the computer keeps asking you to reinsert it.

The right way to eject a CD-ROM disc is either to select the CD-ROM disc and choose Put Away from the File menu or to drag the CD-ROM disc's icon to the trash. If you select the CD-ROM disc and choose Eject Disk from the Special menu, the computer asks you to reinsert the disc. Reinsert the CD-ROM disc, then drag its icon to the Trash. (You won't lose information on the CD-ROM disc by dragging its icon to the Trash.)

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

  To return to the Macintosh desktop, choose Shut Down from the Special menu. After your computer has shut down, restart it. Then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc, close the tray, and start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

The tray of your CD-ROM drive won't open.

If a CD-ROM disc icon appears on your screen, use one of these methods:

- Select the disc icon on your screen and drag the icon to the Trash. (You won't lose information on the CD-ROM disc by dragging its icon to the Trash.)
- Click the disc icon, then choose the Put Away command in the File menu.

  IMPORTANT Don't select the disc icon and then choose Eject Disk from the Special menu. If you do this, the computer asks you to reinsert it.

- If the AppleCD Audio Player window is active, choose Eject CD from the File menu, or simultaneously press the ⌘ and E keys. (AppleCD Audio Player, a program that allows you to play audio CDs and to control your CD-ROM player, is available in the Apple [] menu.)

If no CD-ROM disc icon appears on your screen, do this:

- Press the Open/Close button for your CD-ROM drive.
- If the tray still doesn't open, then turn off your computer, and do the following: Locate the small pinhole to the lower right of the CD-ROM tray opening, insert the end of a large straightened paper clip firmly and horizontally into the pinhole, push gently until the tray is released, then carefully pull the tray open. Do not force the tray open; wait until the paper clip has released it or you may break the front of the tray.

WARNING Turn off your computer before you attempt to eject the tray using a paper clip. If you don't, you may damage the CD-ROM drive.

If neither of these suggestions works, your CD-ROM drive may be damaged. Contact an Apple-authorized service provider or Apple for further assistance.

You can't open the CD-ROM tray and a disc is in the drive.

When the Macintosh has a CD mounted on the desktop, the computer automatically turns off the drive's Open/Close button. To eject a CD follow the instructions in the previous item "The tray of your CD-ROM drive won't open."

Your computer won't restart and a CD-ROM disc is in the drive.

Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

Problems using CD-ROM discs

You insert a CD-ROM disc, but its icon doesn't appear on the Macintosh desktop.

- Make sure that the disc label is facing up and the disc is centered in the tray. If you are using a small (8 cm) disc, make sure your computer is as level as possible and the disc is centered within the inside ring on the tray.
- Make sure the tray is closed all the way.
- Try restarting your computer.
- Try starting your computer from the *Macintosh Restore CD* while holding down the C key. (See the section "Starting Up From the *Macintosh Restore CD*" later in this chapter.) If only the hard disk icon appears on the desktop, then there may be a hardware problem with your CD-ROM drive. If the CD-ROM disc icon appears above the hard disk icon, reinstall your CD-ROM software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 8, "Reinstalling Your Computer's Software."

CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives. You can reinstall it by reinstalling your system software, following the instructions in Chapter 8, "Reinstalling Your Computer's Software."

- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click to put a checkmark next to Apple CD-ROM, then restart your computer.
- If you installed the CD-ROM drive after you bought your computer, make sure the CD-ROM software is installed. Refer to the documentation that came with the CD-ROM drive. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

Your computer displays the message "This is not a Macintosh disk: Do you want to initialize it?" when you insert a CD-ROM disc in the CD-ROM drive.

- Make sure that the Foreign File Access and Audio CD Access CD-ROM extensions are installed and turned on. You can find them in your Extensions folder in the System Folder on your hard disk. If they are not turned on, use the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu to turn them on. (Click to put checkmarks beside them.) Then restart your computer.
- Make sure the CD-ROM software is installed. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.) If you installed a CD-ROM drive after buying your computer, see the manual that came with the drive.
- The disc may use a format that the Macintosh cannot recognize. Ask the disc's manufacturer for a disc that a Macintosh can recognize.

Your computer ejects a CD-ROM disc without giving you any error message.

- Make sure the disc is flat in the tray and the disc label is facing up.

  IMPORTANT If you're using a small (8 cm) disc, make sure it's centered within the tray's inner ring and the computer is absolutely level. An improperly seated small disc in your computer may result in damage to the disc, the CD-ROM drive, or both.

- The disc may need to be cleaned. (See “Handling CD-ROM Discs” in the section “Handling Your Computer Equipment” in Appendix A.) If there are visible scratches on the shiny side of the disc, you may be able to remove them with a CD-ROM disc polishing kit (available from your audio CD dealer). If the scratches can’t be removed, you need to replace the disc.
- The disc may be damaged. Try another disc in the drive, and try the original disc in another drive. If the original drive reads other discs or if the original disc also doesn’t work in another drive, the disc is probably damaged. You need to replace it.

You can’t open a document on a CD-ROM disc.

- Try opening the application program first; then open the document.
- Read the manual that came with your CD-ROM disc. Some discs come with software that you need to install on your computer before using the disc.

You can’t save changes you make to information on a CD-ROM disc.

A CD-ROM disc is a read-only medium. This means that information can be read (retrieved) from it, but not written (stored) on it. You can save the changed information on a hard disk or floppy disk.

Problems using ISO 9660 or High Sierra discs

You cannot access files on a CD-ROM disc that uses the ISO 9660 or High Sierra format.

- Discs in the ISO 9660 and High Sierra disc formats have version numbers attached to file names. Some application programs need these version numbers in order to work with files. To make the version numbers available to programs on your computer, follow these instructions.

  Drag the CD-ROM disc icon to the Trash. When the tray opens, hold down the Option key while you push the tray back in. When the disc reappears on the screen, release the Option key. The program you are using should now be able to locate file names on that CD-ROM disc.
- Make sure that Foreign File Access, ISO 9660 File Access, and High Sierra File Access are present in the Extensions folder in your System Folder on your hard disk.

Problems playing audio CDs

You don't hear any sound when you play an audio CD or an audio track on a CD-ROM disc using the AppleCD Audio Player.

- If you have headphones or speakers connected to the computer, adjust the connectors to make sure they are firmly connected. Make sure the volume control on your headphones or speakers is not turned down too low.
- If you do not have headphones or speakers connected to the computer, make sure that nothing else is plugged into the sound output port (🔊) on the back of your computer.
- If you are using a CD-ROM disc over a network, you won't be able to hear the audio portion.
- Make sure the volume is turned up in the AppleCD Audio Player. With the Audio Player open, drag the volume control slider up, use the volume controls on your computer, or press the Up arrow key on your keyboard.
- The CD may have been paused. Click the Play/Pause button in the AppleCD Audio Player once or twice.
- If your CD-ROM drive was installed after you bought your computer, make sure the audio cable is properly connected. See the documentation that came with the CD-ROM drive.

While playing an audio track on a CD-ROM disc that combines audio tracks and data, you double-click the disc icon and the audio track stops playing.

You can't open data files on a CD-ROM disc and listen to audio tracks on that disc at the same time.

You are unable to record sound from an audio CD.

- Check your computer's sound input port to see if a microphone or other device is connected.
- You may need to reset the sound options in the Monitors & Sound control panel. Refer to the "Sound" topic area of Macintosh Guide, available in the Guide (?) menu.

You insert an audio CD and it begins playing immediately.

Your computer is set to automatically begin playing audio CDs when they are inserted. To turn off this feature, use the QuickTime Settings control panel available in the Apple (🍎) menu to change the automatic play setting.

Problems using Photo CDs

You insert a Photo CD disc, but its icon doesn't appear on the desktop.

Reinstall the CD-ROM and QuickTime software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 8, "Reinstalling Your Computer's Software."

Your computer does not display color icons for individual images on a Photo CD.

Your computer may be low on memory. To view color icons, restart your computer and then reopen the Photos folder. See the "Memory" topic area of Macintosh Guide, available in the Guide (?) menu, for more information on managing memory.

After you open an image file on a Photo CD, the image is scrambled, colors are displayed incorrectly, or no image appears in the window.

The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (See the "Memory" topic area of Macintosh Guide, available in the Guide [?] menu, for more information on managing memory.)

After you open an image on a Photo CD, your system is "frozen" and does not respond to any input, or you have a "bomb" message on your screen.

Restart your Macintosh. (If you need help restarting your computer, see "Start Over by Restarting Your Computer" in the section "If You Have Trouble" at the beginning of this chapter.) The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. See the "Memory" topic of Macintosh Guide, available in the Guide (?) menu, for more information on managing memory.

If your computer's performance decreases

If you notice a decrease in your computer's speed and general performance after you install special software (a control panel, system extension, or custom utility), it may be because the software is not compatible with Macintosh computers built with the PowerPC microprocessor.

- To find out if a system extension or control panel is the problem, hold down the Shift key while you restart the computer. This temporarily turns off control panels and extensions. If the computer performs better without these software items, one of them is likely to be the problem. (If you just added new software, its system extension, control panel, or custom utility is the most probable cause of the problem.)

  To find out which software is the problem, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn off a system extension or set of extensions and then restart your computer. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Computer" topic area of Macintosh Guide, available in the Guide (?) menu. If the computer performs better when an extension is turned off, contact the extension's manufacturer for information or an upgrade.

- Use the Memory control panel to turn off virtual memory. For more information on virtual memory, see the "Memory" topic area of Macintosh Guide, available in the Guide (?) menu.

  Note: If you turn on both virtual memory and RAM disk in the Memory control panel, don't set both of them at or near their maximum values. Doing so can result in unpredictable or reduced performance by your computer. (RAM disk uses random-access memory, or RAM, as if it were a hard disk.)

If you still do not notice an improvement, you may want to reinstall system software on your startup hard disk. See Chapter 8, "Reinstalling Your Computer's Software," for instructions.

If you typically use several application programs at the same time, your computer's performance will increase if you install more random-access memory (RAM). See Chapter 10, "Installing Expansion Cards and Additional Memory."

Solving printer problems

The following suggestions should work for all printers. (Also refer to the manual that came with the printer.)

- Make sure that the printer driver for your printer is turned on in the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu). To find out the name of the printer driver—for example, *LaserWriter*—refer to the documentation that came with your printer. The printer driver should appear in the Extensions list and have a checkmark beside it. (Click to put a checkmark beside it, and then restart your computer.)
- Check your printer settings in the Chooser (in the Apple [] menu), making sure you have selected the correct printer. If you are using a printer that is shared by other computer users (a printer on a local network), make sure that AppleTalk (in the lower-right corner of the Chooser) is active. If you are using your own printer (a serial printer connected to your computer), make sure that AppleTalk is inactive.
- Turn off the computer and printer and check the printer cable connections.
- If none of these suggestions solves the problem, you may need to reinstall the printer driver that came with your printer. Refer to the manual that came with your printer.

Note: If you have an Apple printer, you need to determine which printer driver to reinstall—the one that came with your printer or one of the drivers included on your *Macintosh Restore CD* (both drivers must have identical names). You should install the driver that has the most recent date. You can see the date of a driver file by inserting its disk and choosing to view its content by Name (select "by Name" from the View menu). To install the printer driver from the *Macintosh Restore CD*, drag the driver icon to the System Folder on your hard disk and then click OK. To install the printer driver that came on a floppy disk with your printer, refer to the manuals that came with the printer for instructions.

Starting up from the *Macintosh Restore CD*

To test, repair, or initialize a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. You can start up your computer using the CD-ROM disc titled *Macintosh Restore CD*, which came with your computer.

The procedure for starting up from the CD-ROM disc varies depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your computer.

Depending on what you see on your screen, choose the appropriate instructions (next in this section).

If you see a blinking question mark on your screen

The blinking question mark means that your computer is unable to find usable system software on your hard disk.

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Restore CD* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.
3. **To close the tray, push the tray in or press the Open/Close button.**

   Your computer recognizes the CD-ROM disc as a startup disk, and in a few seconds the Macintosh desktop with a Launcher appears.

If you see the Macintosh desktop

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Restore CD* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.
3. **To close the tray, push the tray in or press the Open/Close button.**
4. **Hold down the C key on your keyboard while you choose Restart from the Special menu and wait for the message "Welcome to Macintosh."**
5. **When you see the "Welcome to Macintosh" message, release the C key.**

   Your computer is now running the system software that's on the *Macintosh Restore CD*.

Repairing a damaged disk

If you see a message reporting that a disk is damaged or unreadable, you may need to repair the disk.

Try these suggestions first

If you can't start up from a hard disk or you don't see the hard disk icon on the desktop, try the following:

- If the hard disk is internal, shut down your Macintosh, wait at least 30 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- If the hard disk is your startup disk, start up with a different startup disk. (See the previous section, "Starting Up From the *Macintosh Restore CD*.")

  If, after you start up from a different disk, your hard disk's icon appears on your desktop, reinstall system software on the hard disk. (See Chapter 8, "Reinstalling Your Computer's Software.")

- Check the ID numbers of all SCSI equipment (anything connected to the SCSI port [⇳]) on your computer. Each device must have a unique ID number. The computer itself (the main logic board inside it) has the ID number 7. The ID numbers 0, 1, 2, 3, 4, 5, and 6 are available for additional SCSI devices.

  Also check that the chain of devices is terminated properly. For information on setting SCSI ID numbers and terminating a SCSI chain, see both the manuals that came with your SCSI equipment and Chapter 3 of this manual.
- If none of these suggestions solves the problem, test the disk by following the instructions given in "Checking for Damage on Your Hard Disk," next.

Checking for damage on your hard disk

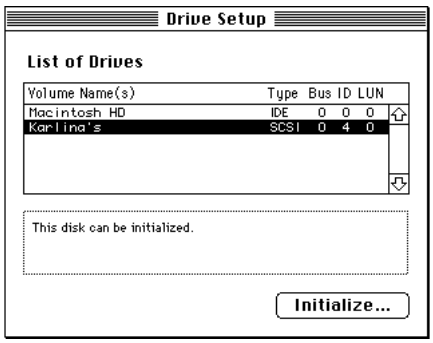
You can test a hard disk for damage with the Drive Setup program, which is on the *Macintosh Restore CD*, a CD that came with your computer.

1 **Start up your computer from the *Macintosh Restore CD.***

See "Starting Up From the *Macintosh Restore CD*" earlier in this section.

2 **Click the Drive Setup icon in the Launcher to open the Drive Setup program.**

3 **In the List of Drives, click the disk you want to test.**



4 **From the Functions menu, choose Test Disk.**

5 **When a message tells you that the testing is complete, click Quit.**

If the test reveals a problem, you may be able to correct it by using Disk First Aid or another disk repair program (see the instructions in the next section) or you may need to reinitialize the disk (see “Initializing a Hard Disk” later in this chapter). Consult an Apple-authorized service provider for assistance if necessary. If you had a hard disk from another manufacturer installed after you bought your computer, use the software that came with the disk or contact the disk vendor to get the latest version of software.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid program, which is on the *Macintosh Restore CD*, a CD that came with your computer.

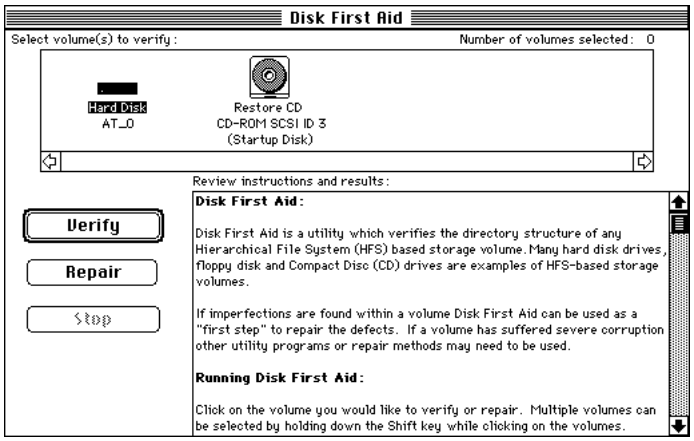
1 **Start up your computer from the *Macintosh Restore CD*.**

See “Starting Up From the *Macintosh Restore CD*” earlier in this chapter.

2 **Click the Disk First Aid icon in the Launcher to open the Disk First Aid program.**

3 **Click the icon of the disk you want to test.**

Disk icons appear in a box at the top of the Disk First Aid window.



4 **Click Repair to begin testing and repairing the disk.**

You can't repair the startup disk or the disk that contains the Disk First Aid program, but you can test these disks by clicking Verify. If the program reveals a problem with either of these disks, start up the computer from another disk so that you can repair the damaged disk.

If you want to test and repair another disk, click its icon and then click Repair.

5 **When testing and repair are done, choose Quit from the File menu.**

If Disk First Aid cannot correct the problem

- Try repairing the disk again. Sometimes repeating the process corrects the problem.
- Use another disk repair or recovery program. Some disk repair programs let you recover information from a damaged disk.
- Consult an Apple-authorized service provider for help.
- If you can't repair the disk, you'll need to reinitialize it, which erases all the information on the disk. Before you reinitialize, be sure you recover all the information you can and back it up. Then erase (reinitialize) the disk. For instructions on reinitializing a floppy disk (that is, preparing it for use), see the "Disks" topic area of Macintosh Guide, available in the Guide (?) menu. For instructions on reinitializing a hard disk, see the next section, "Initializing a Hard Disk."

  If the reinitialization doesn't work, discard the damaged disk (if it's a floppy disk) or take it to your Apple-authorized service provider for repair (if it's a hard disk). Bring with you all the CDs that came with your computer when you see the service provider.

Initializing a hard disk

The hard disk inside your computer was initialized (formatted for use) at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if one of the following is true:

- You purchase an uninitialized hard disk from another manufacturer.
- Your hard disk is damaged and can't be repaired.

If a hard disk needs to be initialized, its icon does not appear on the desktop when you start up the computer using another disk.

You initialize your internal hard disk using a program called Drive Setup, which is on the *Macintosh Restore CD*.

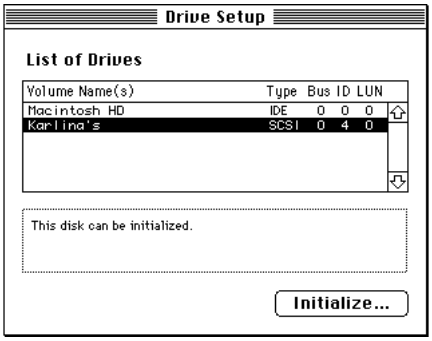
WARNING Initializing a disk erases any information that may be on it. Before you initialize a damaged disk, try to repair it as described in "Repairing a Damaged Disk" earlier in this chapter.

1 **Start up your computer from the *Macintosh Restore CD.***

See “Starting Up From the *Macintosh Restore CD*” earlier in this section.

2 **Click the Drive Setup icon in the Launcher to open the Drive Setup program.**

3 **In the List of Drives, click the disk you want to initialize.**



4 **Click Initialize to initialize the hard disk.**

5 **Click Quit when you see a message reporting that initialization was successful.**

If a message reports that initialization failed, try again. If initialization fails a second time, take the disk to your Apple-authorized service provider for repair.

Read this appendix for instructions on installing an expansion card in your computer.

10 Installing Expansion Cards and Additional Memory

This appendix provides information about expansion cards and memory (including an optional cache) and explains how to install them.

Installing an expansion card or memory involves three procedures (detailed steps for each are provided later):

- opening the computer
- inserting the card or memory module into a specific slot or socket
- closing the computer

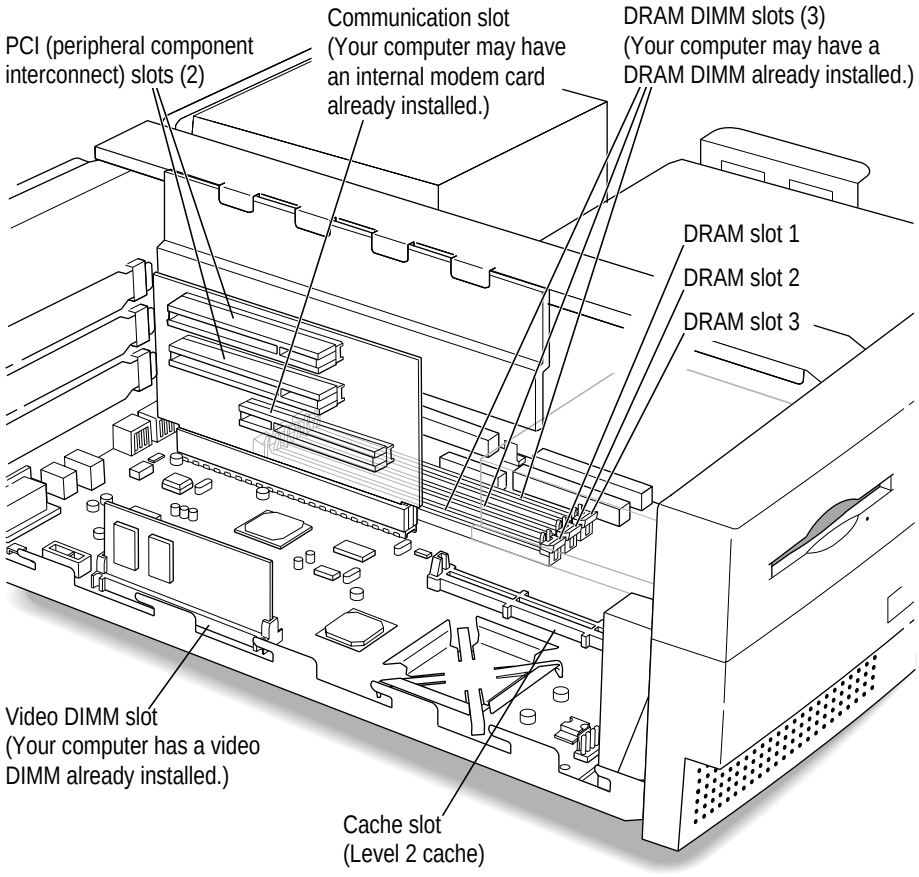
About expansion cards

Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as networking capability. Two slots that accept different sizes of expansion cards are available in your Macintosh:

- one peripheral component interconnect (PCI) slot that accommodates most 6.88-inch cards
- one PCI slot that accommodates a either a 6.88-inch card or a full-size 12.28-inch card

Your computer also includes a communication slot, which contains a pre-installed internal modem card.

Your computer supplies 40 watts (W) of power to the two PCI slots so you can install either one 25-W card and one 15-W card, or two 15-W cards.



WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training or tools), consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to install the card yourself, any damage you may cause to your computer or card will not be covered by the limited warranty on your computer. If the card is not an Apple-labeled product, check with an Apple-authorized dealer or service provider to see if you can install it yourself.

About memory

You can have memory—dynamic random-access memory (DRAM), video memory, or a cache—added to your computer in packages called Dual Inline Memory Modules, or DIMMs.

DRAM configurations

The main logic board has three slots where DIMMs can be installed. Your computer can use the following DRAM configurations:

DIMM slot number	DIMM size	DIMM banks	Refresh count	Device technology
1	8 MB	Single	1K	16 Mbit
1	16 MB	Single	2K	16 Mbit
1	32 MB	Single	2K	16 Mbit
2 and 3	8 MB	Single	1K	16 Mbit
2 and 3	16 MB	Single or dual	1K	16 Mbit
2 and 3	16 MB	Single or dual	2K	16 Mbit
2 and 3	32 MB	Single or dual	2K	16 Mbit
2 and 3	64 MB	Dual only	2K	16 Mbit

You can increase your computer's DRAM to a maximum of 160 MB by having an Apple-authorized dealer or service provider remove the preinstalled DRAM DIMM, if necessary, and install a 32 MB DIMM in slot 1 and two 64 MB DIMMs in slots 2 and 3. DIMMs of mixed sizes may be installed one at a time in any order in the memory slots—for example, you can install one 8 MB DIMM and one 16 MB DIMM.

Note: Slot 1 is labeled "single bank" and can only accept single bank DIMMs. Slots 2 and 3 are labeled "dual bank" and can accept either single bank or dual bank DIMMs—the DIMM manufacturer can tell you what kind of DIMM you have.

IMPORTANT The DIMMs should be 64-bit wide, 168-pin 3.3-volt (V) unbuffered Extended Data Output (EDO) DRAM DIMMs, with 60-nanosecond (ns) RAM access time or faster, and a 1K or 2K refresh count. The DIMMS must be composed of DRAM chips with a row and column configuration of 10 by 10, 11 by 10, 11 by 11, or 12 by 9. The 64-bit wide, 168-pin, 5-V buffered fast-page or EDO DRAM DIMMs from other Macintosh computers are not compatible with your computer and should not be used. Do not use DIMMs that support a 4K refresh count.

The DRAM sockets are located behind the card that supports the PCI cards in your computer. It may be difficult to maneuver the DRAM DIMMs in this space, so we recommend that you have an Apple-authorized service provider install your DRAM DIMMs.

Video DIMM configurations

Increasing your computer's video memory can result in faster video performance. Your computer's video memory can be increased to a maximum of 4 MB. You can use the following types and sizes of video DIMMs in your computer:

- 5-V EDO DRAM—1 MB or 2 MB sizes
- 3.3-V SGRAM—2 MB or 4 MB sizes

Cache configurations

A High Performance Module (256K level 2 cache) provides an overall increase in your computer's performance. If your computer doesn't already include a level 2 cache, you can add one by having an Apple-authorized dealer or service provider install a cache DIMM in the cache slot on the main logic board of your computer.

Opening the computer

IMPORTANT To avoid generating static electricity that may damage components, do not walk around the room until you have finished installing the expansion card or memory and closed the computer.

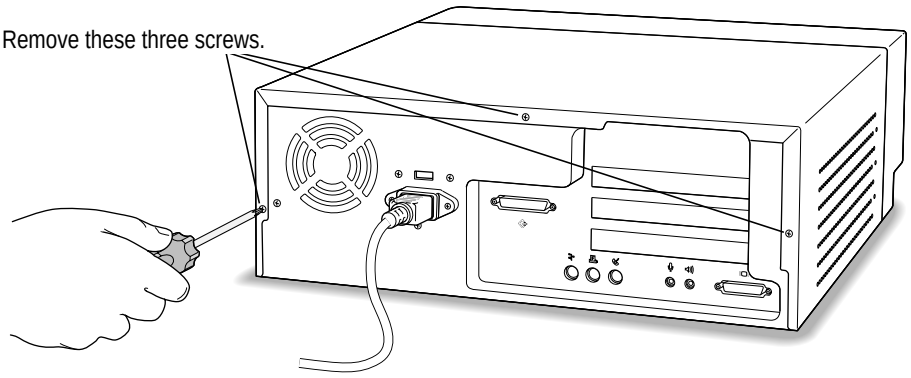
1 **Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key on the keyboard.

2 **Unplug all the cables except the power cord from the computer—you'll unplug the power cord later on. (Don't forget to unplug the cable that connects your keyboard to the computer.)**

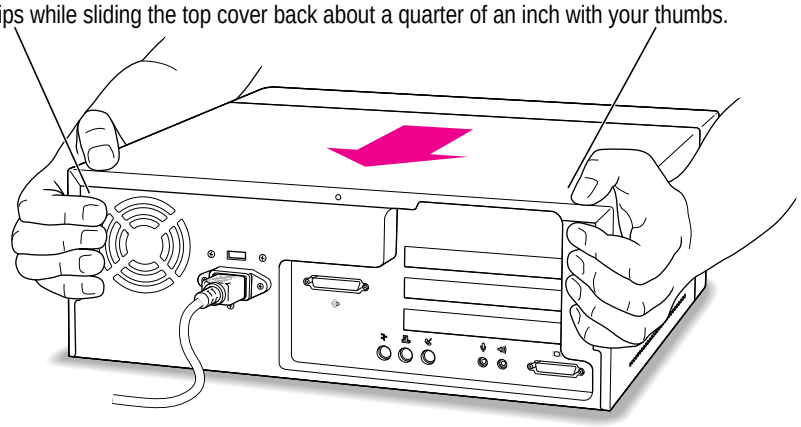
Leaving the power cord plugged in helps protect the computer from damage caused by electrostatic discharge.

3 **Unscrew and remove the three screws on the back of the computer.**

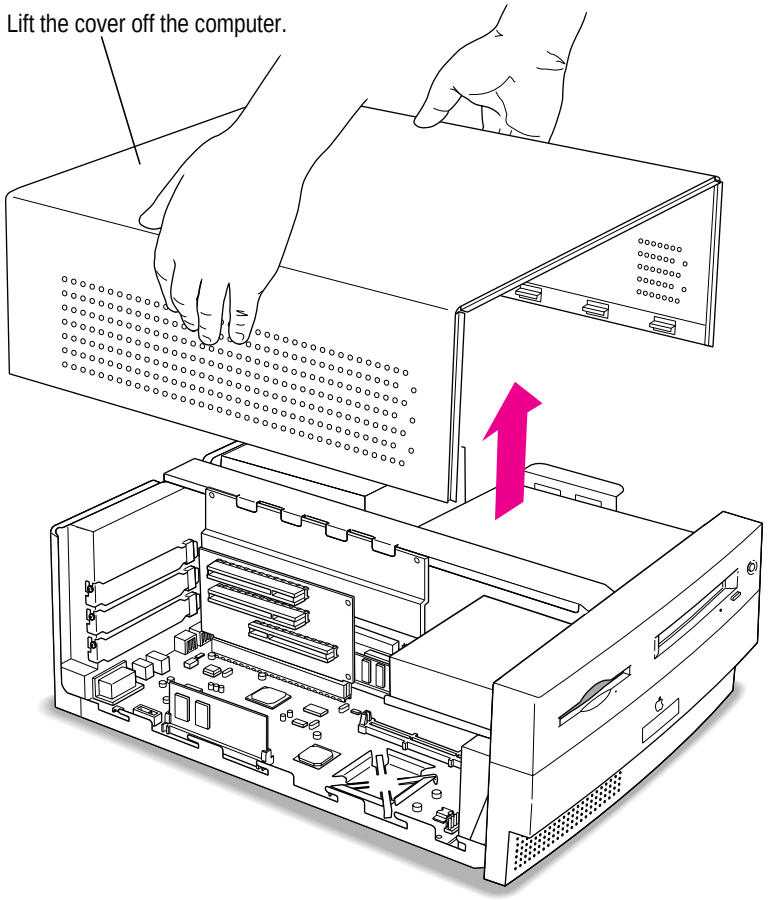


4 **Remove the cover as pictured below.**

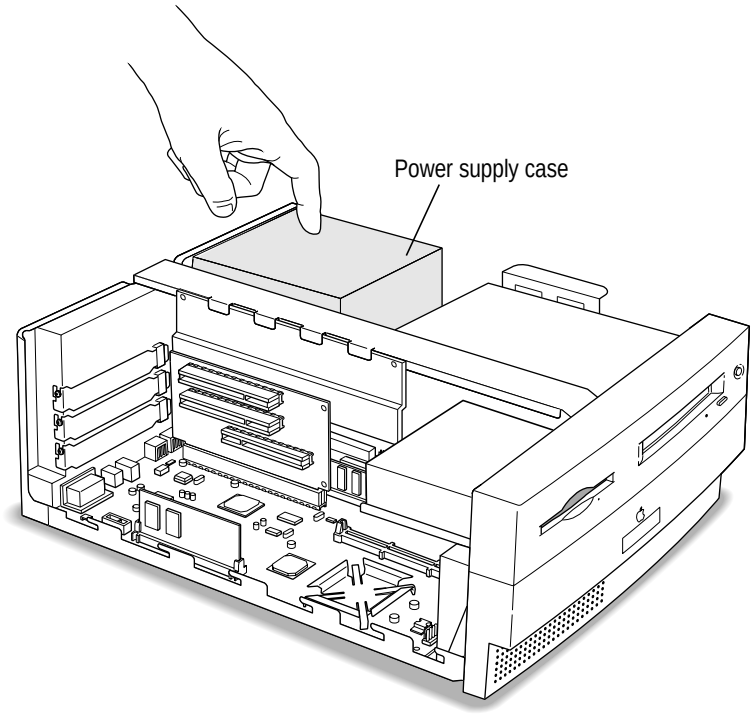
Firmly grasp the back of the computer and push in on the rear panel with your fingertips while sliding the top cover back about a quarter of an inch with your thumbs.



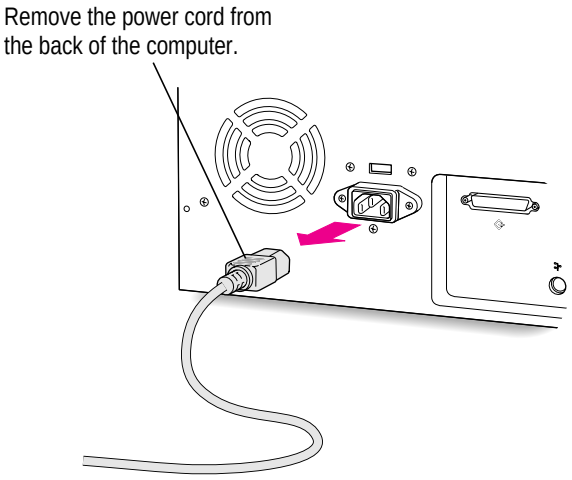
Lift the cover off the computer.



5 **To discharge static electricity from your body that could damage the components inside the computer, touch the metal power supply case inside the computer.**



6 **Unplug the power cord from the back of the computer.**



What you do next depends on whether you're installing an expansion card or a memory, video, or cache DIMM. Skip to the section that pertains to the item you are installing.

Installing an expansion card

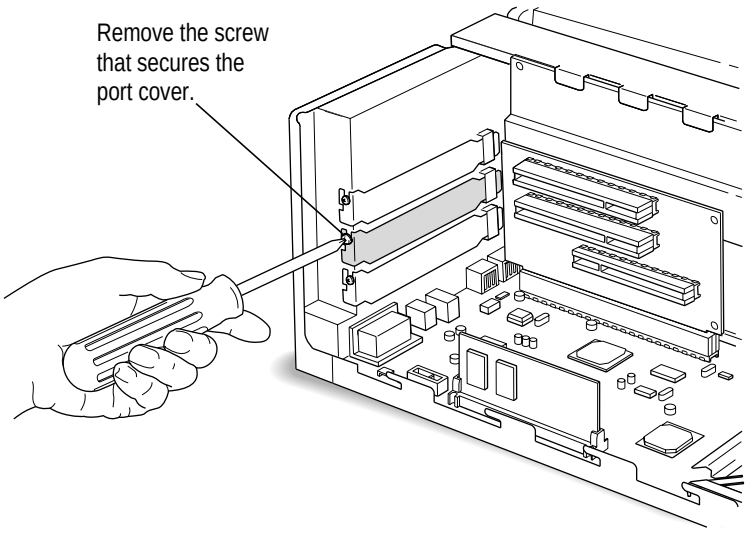
This section contains instructions for installing PCI cards and communication cards, such as Ethernet and internal modem cards.

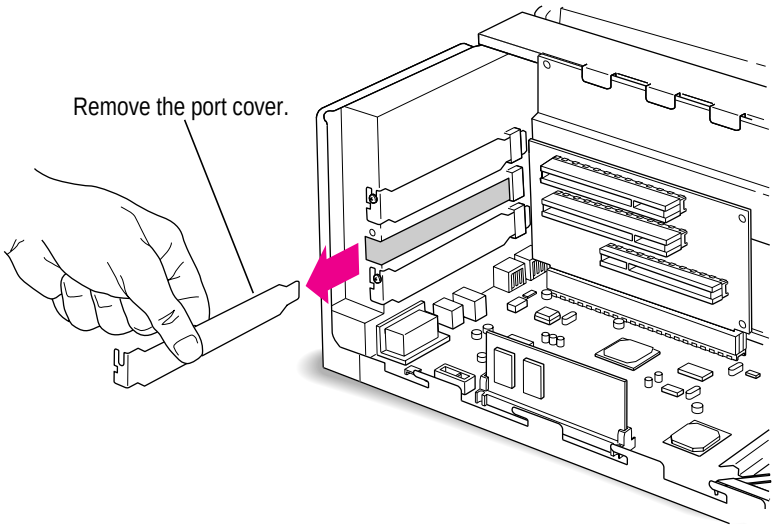
Installing a PCI card

This section contains general instructions for installing a peripheral component interconnect (PCI) card. Refer also to any instructions that came with the card. PCI cards for your computer must be either 6.88 inches or 12.28 inches long. Here's how to install one:

1 **If your PCI card has ports for connecting equipment, remove the port cover.**

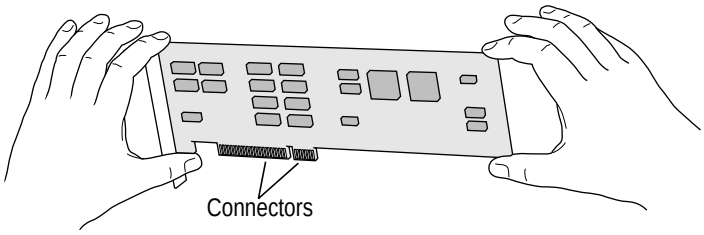
6.88-inch cards fit in the top slot; a 6.88-inch or 12.28-inch card fits in the middle slot.





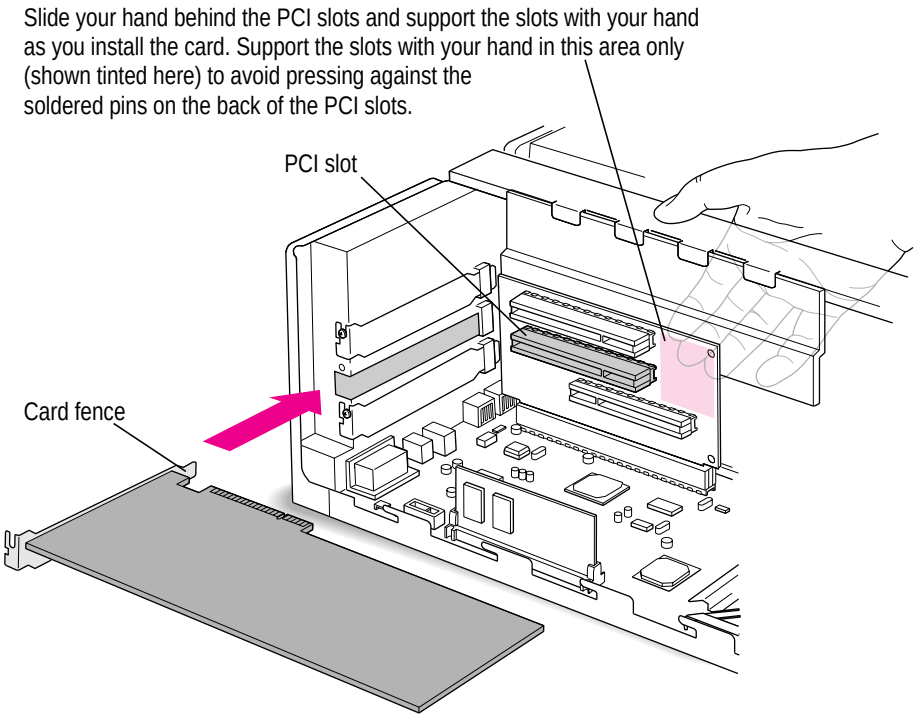
2 Remove the PCI card from its static-proof bag.

Hold the card by its edges to avoid touching any of its connectors.

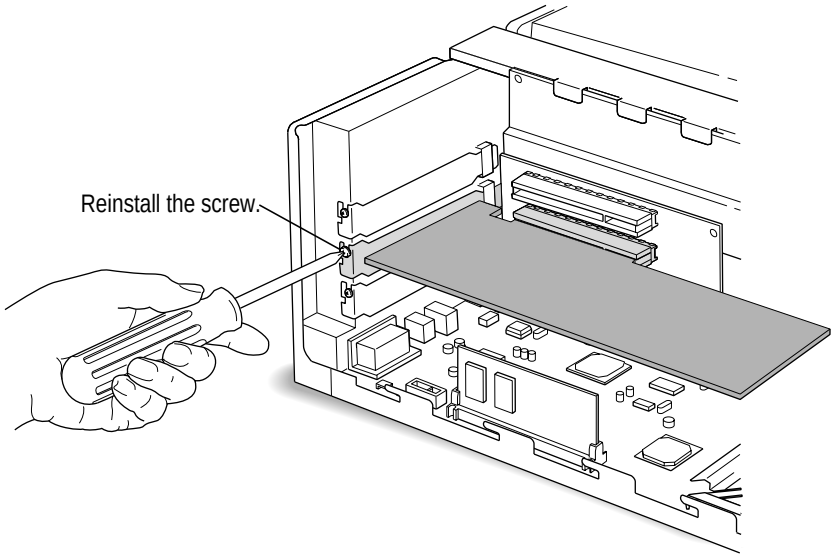


3 **Insert the PCI card into the PCI slot.**

Be sure to align any ports on the card with the port opening you uncovered earlier. As you press the card firmly into the slot, you may find it helpful to reach behind with your hand to support the riser card on which the PCI slot is located. (Avoid the soldered pins on the back of the riser card because they can be sharp.)



4 **Reinstall the screw you removed from the port cover earlier.**



5 **If you have memory or video DIMMs or a cache DIMM to install, refer to those instructions in the next section. If you are finished installing items in your computer, proceed to "Closing the Computer," later in this chapter.**

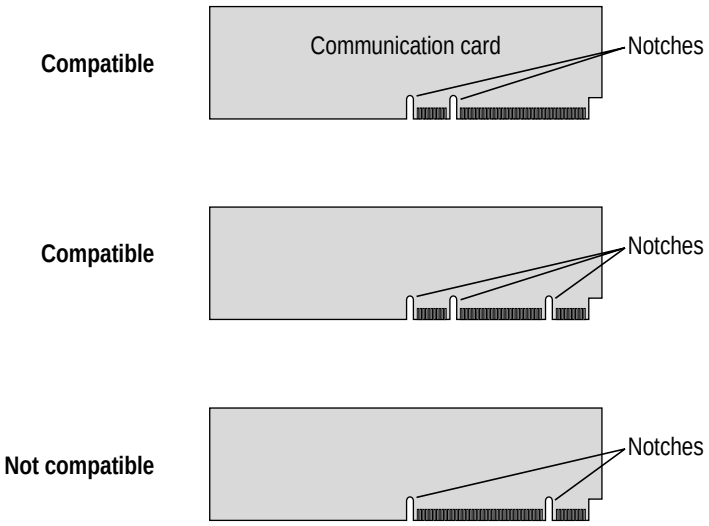
Installing a communication card

Your computer comes with an internal modem card installed in the communication slot. However, there may be some situations when you want to use the communication slot for other cards, or you'd rather use an external modem. This section contains instructions for removing the internal modem card and installing a Communication Slot II Ethernet card in the communication slot in your computer.

Note: If you want to keep the internal modem card in the communication slot but also want to connect to an Ethernet network, buy and install the kind of Ethernet card that goes in your computer's PCI slot. Then follow the instructions in "Installing a PCI Card" earlier in this section.

The communication slot and the cards that fit in it are often referred to as “Apple Comm Slot II” or “CS II” devices. Be sure to use a card that is Apple Comm Slot II-compliant; earlier versions of Ethernet cards will not work in this slot.

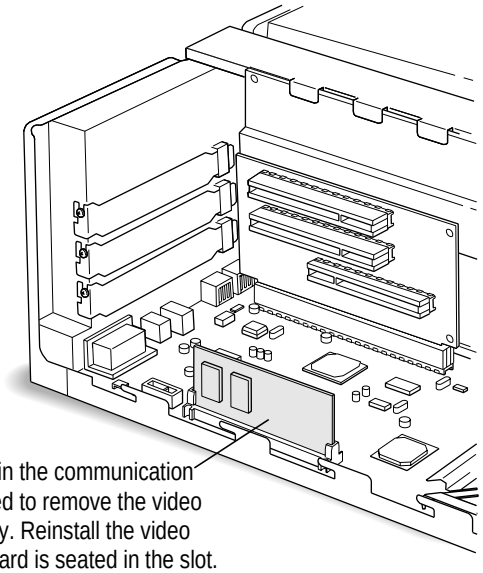
Some communication cards designed for other communication slots are not compatible and cannot be installed here. You can tell by examining the placement of the notches on the card. Use the following illustration as a guide if you’re not sure you have the correct type of card.



To install a communication card in the communication slot follow these steps:

1 **To install a communication card in the bottommost slot, you may find it easier to maneuver inside the computer if you first remove the video DIMM.**

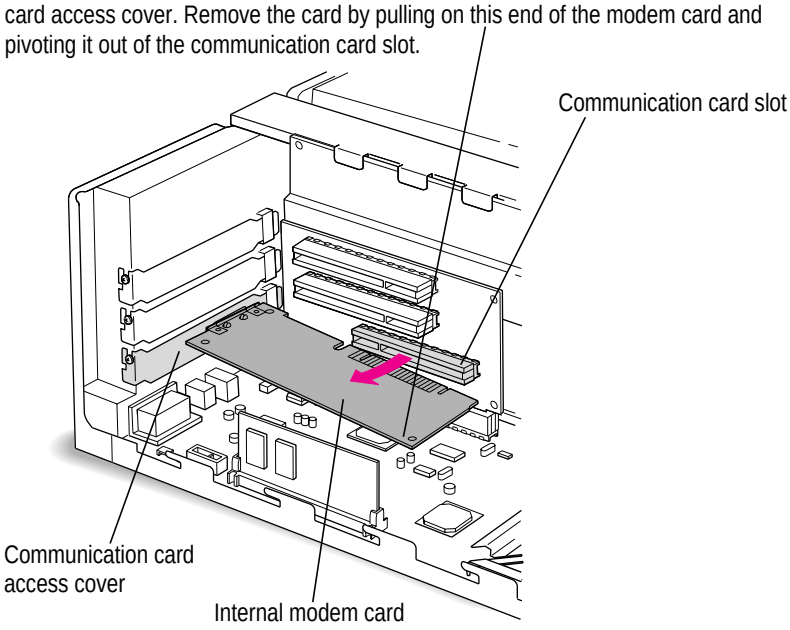
Refer to “Installing a Video DIMM” later in this chapter for information on the video DIMM.



To install a card in the communication slot you may need to remove the video DIMM temporarily. Reinstall the video DIMM after the card is seated in the slot.

2 **Remove the internal modem card.**

The internal modem card has a hook on it that engages the hole in the communication card access cover. Remove the card by pulling on this end of the modem card and pivoting it out of the communication card slot.



3 **Remove the communication card from its static-proof bag.**

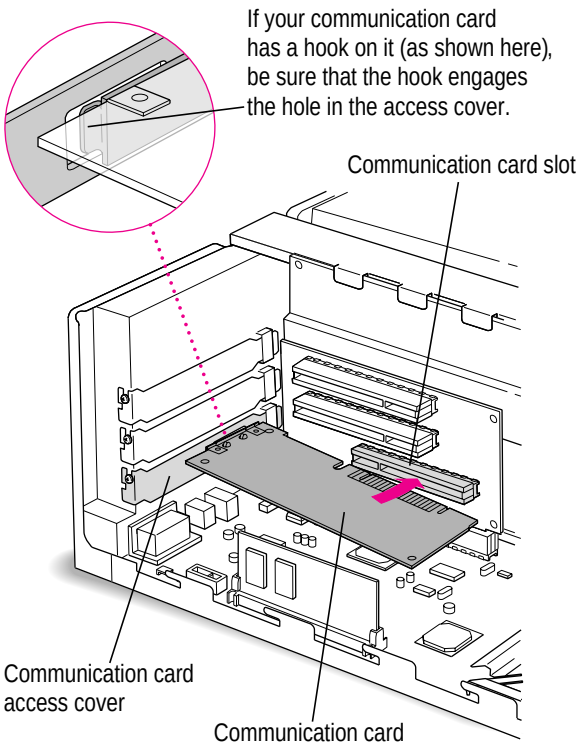
Hold the card by its edges to avoid touching its connectors.

Note: If the card you are installing is a thin coax Ethernet card, you must remove the T-connector on the card in order to fit the connector through the access cover.

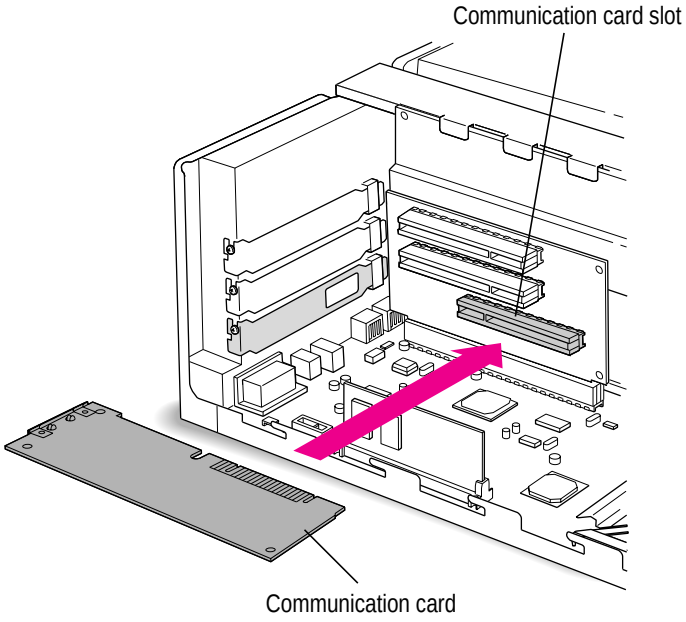
4 **Align the card over the communication slot.**

5 **Check the external connector on your card, see which of the following two illustrations matches the card you have, and install the card according to the illustration.**

If the card has a hook, make sure it engages the hole in the access cover before you push the card into the slot.



If the card does not have a hook, simply pass the external connector through the opening in the vertical plate as shown. (Some cards have an external connector that protrudes through the opening; others, like the one shown here, have a flatter external connector.)



6 **Passing the external connector through the opening in the vertical plate, insert the card into the communication slot. Press down on the card until the connector is solidly in place.**

Don’t force the card. If you meet resistance, pull it out and try again.

7 **To see if the card is properly connected, lift it gently. If it resists and stays in place, it’s connected.**

8 **If you removed the video DIMM earlier, reinstall it now following the instructions in "Installing a Video DIMM," later in this chapter.**

Note: After you have finished these installation instructions and turned on your computer, you may need to install software for your communication card. If you installed an Ethernet card, you may also need to change the network connection in the AppleTalk control panel. See your network administrator, the manual that came with the card, and Chapter 7, "Connecting Your Computer to a Network," earlier in this manual for more information.

9 **If you have DIMMs to install, follow the instructions in the next section. If you are finished installing items, proceed to "Closing the Computer."**

Installing memory, video, or cache DIMMs

The DRAM sockets are located behind the card that supports the PCI cards in your computer. It may be difficult to maneuver the DRAM DIMMs in this space, so we recommend that you have an Apple-authorized service provider install your DRAM DIMMs. Refer to the section "DRAM Configurations" earlier in this chapter for the types and sizes of DIMMs that can be installed in your computer.

WARNING Although instructions for installing DIMMs are provided in this manual, Apple Computer strongly recommends that you have an Apple-certified technician install them. Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install additional DIMMs yourself, you risk damaging your equipment, and this damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Removing a DRAM DIMM

To upgrade your computer to the maximum amount of memory, you may want to replace the DRAM DIMM that comes preinstalled in your computer with one of a higher capacity. To do this, you'll need to remove the existing DIMM following the instructions provided in this section, then install a higher capacity DIMM following the instructions in "Installing a DRAM DIMM," next in this appendix.

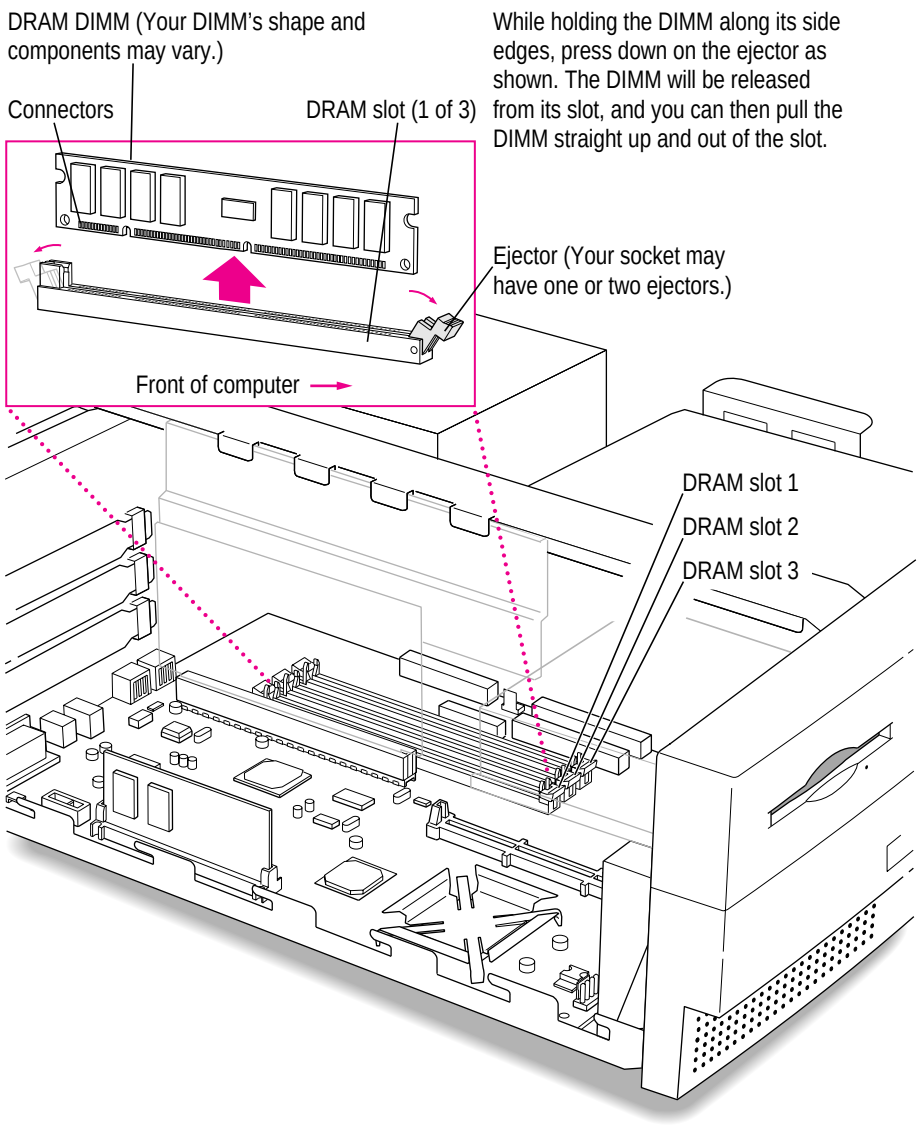
To remove a DRAM DIMM, follow these instructions:

1. **Push the ejector on the DRAM slot outward and down to open it.**

   Your socket may have one or two ejectors.

2. **Press down on the ejector to release the DRAM DIMM from its slot as pictured in the following illustration.**

   When the ejector releases, pull the DIMM straight up and out of the slot.


DRAM DIMM (Your DIMM's shape and components may vary.)
Connectors
DRAM slot (1 of 3)
While holding the DIMM along its side edges, press down on the ejector as shown. The DIMM will be released from its slot, and you can then pull the DIMM straight up and out of the slot.
Ejector (Your socket may have one or two ejectors.)
Front of computer
DRAM slot 1
DRAM slot 2
DRAM slot 3

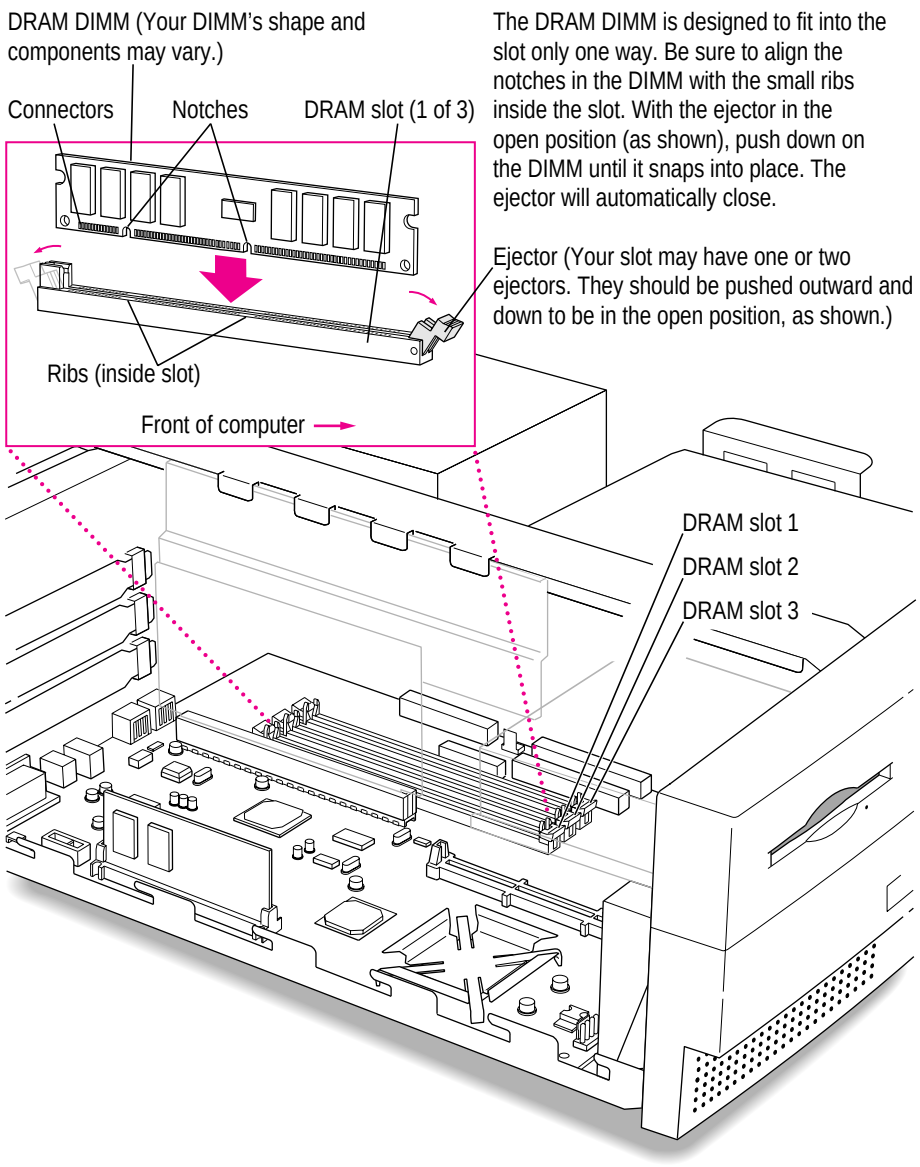
Installing a DRAM DIMM

1 **Push the ejector on the DRAM slot outward and down to open it.**

Your socket may have one or two ejectors.

2 **With the ejector in the open position, align the DRAM DIMM in the DRAM slots as shown.**

IMPORTANT Do not touch the DIMM's connectors. Handle the DIMM only by the edges.



The DRAM DIMM is designed to fit into the slot only one way. Be sure to align the notches in the DIMM with the small ribs inside the slot. With the ejector in the open position (as shown), push down on the DIMM until it snaps into place. The ejector will automatically close.

Ejector (Your slot may have one or two ejectors. They should be pushed outward and down to be in the open position, as shown.)

3 **Push down on the DIMM until it snaps into place.**

The ejector automatically closes.

4 **Repeat steps 1–3 if you have other DRAM DIMMs to install.**

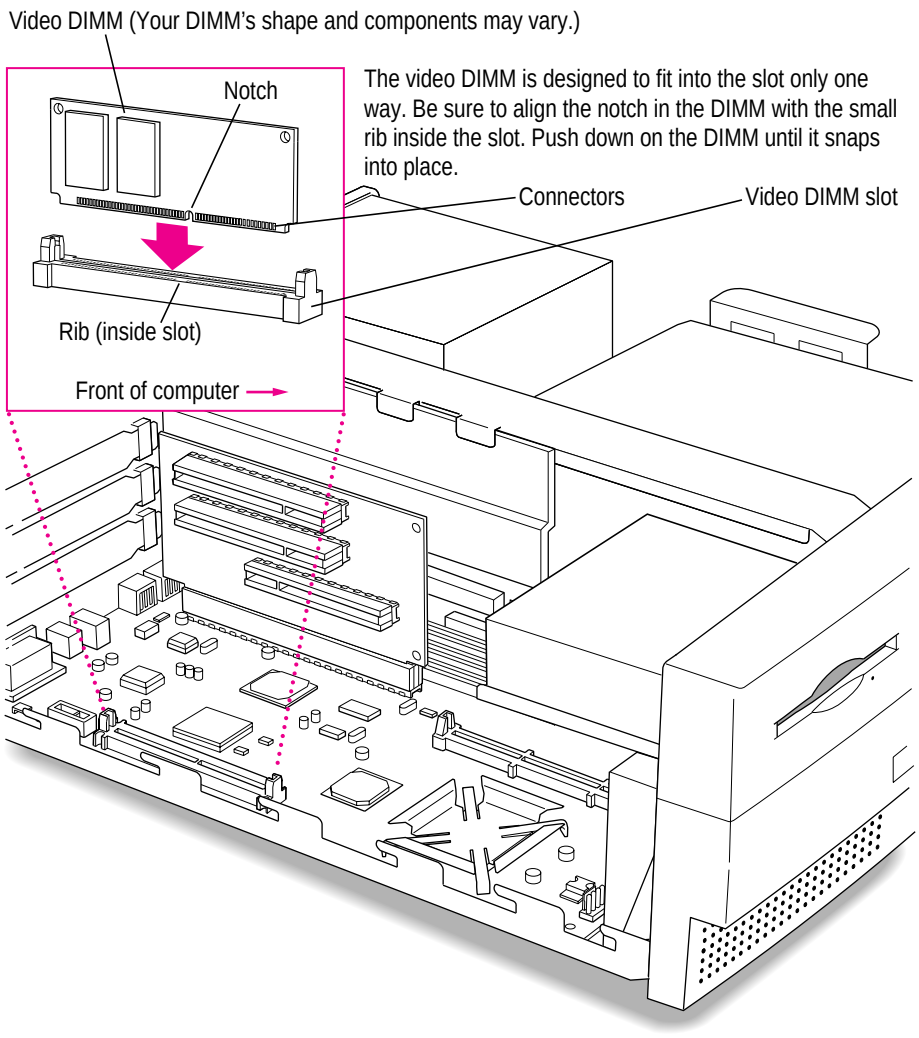
5 **If you have a video DIMM or cache DIMM to install, proceed to "Installing a Video DIMM" or "Installing a Cache DIMM." If you are finished installing items in your computer, proceed to the section "Closing the Computer," later in this chapter.**

Installing a video DIMM

This section describes how to install a video DIMM.

1 **Align the notches in the video DIMM with the small ribs inside the module slot, and insert the module into the slot, as the following picture illustrates.**

IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.

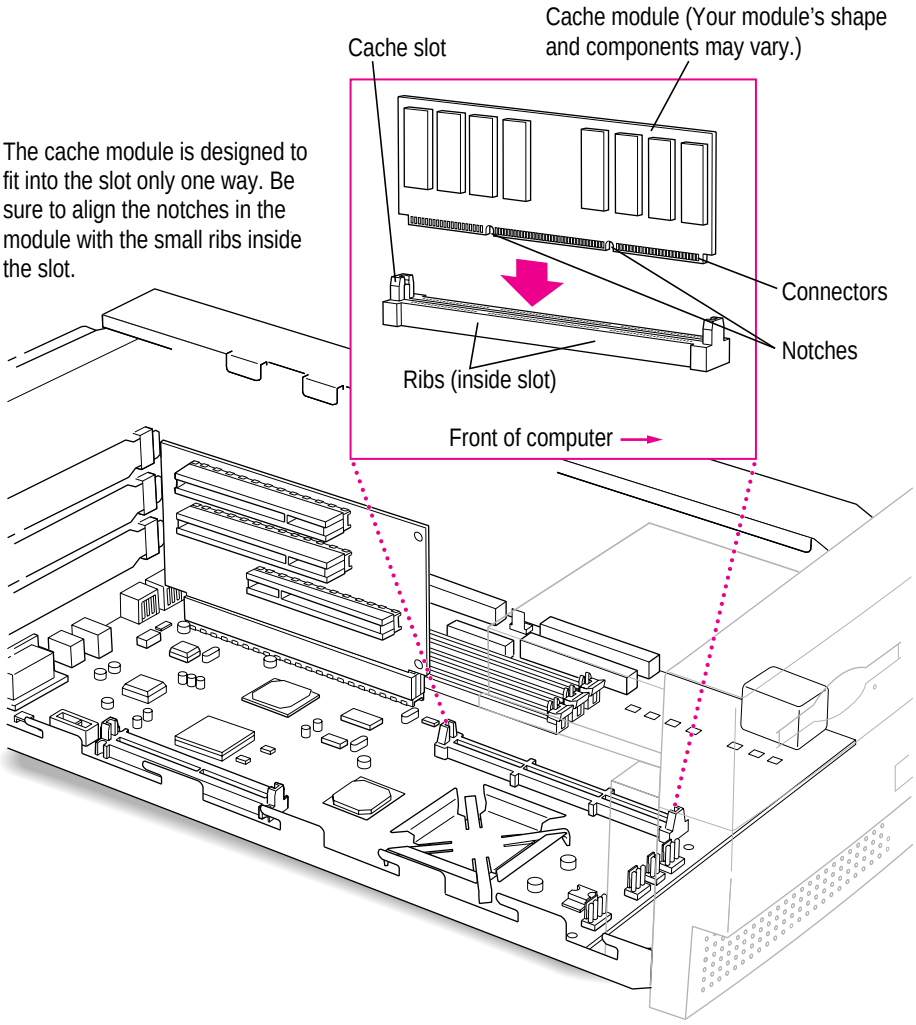


2 **If you want to install a cache DIMM, proceed to "Installing a High Performance Module (Level 2 Cache DIMM)," next. If you are finished installing items in your computer, proceed to the section "Closing the Computer" later in this chapter.**

Installing a High Performance Module (Level 2 cache DIMM)

1 **Align the notches in the cache DIMM (also called a cache *module)* with the small ribs inside the Level 2 cache slot and insert the module into the slot as pictured.**

IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.

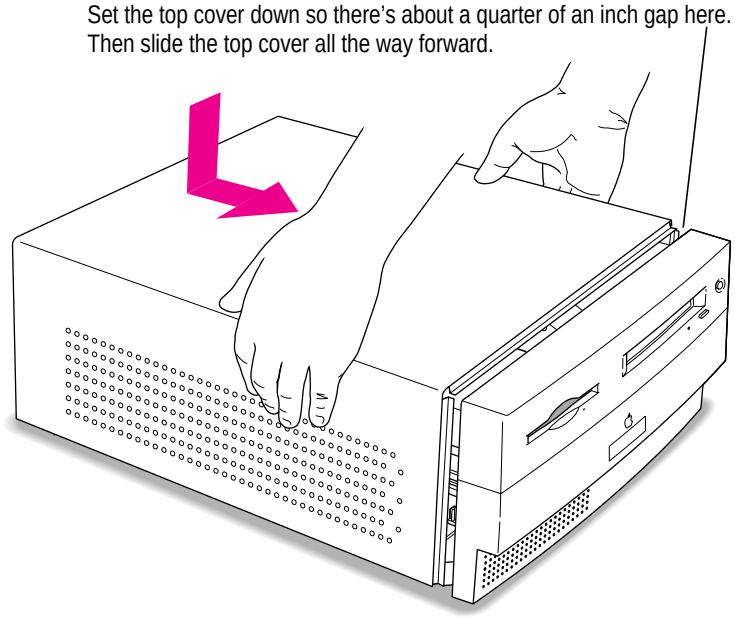


2 **Proceed to "Closing the Computer," next.**

Closing the computer

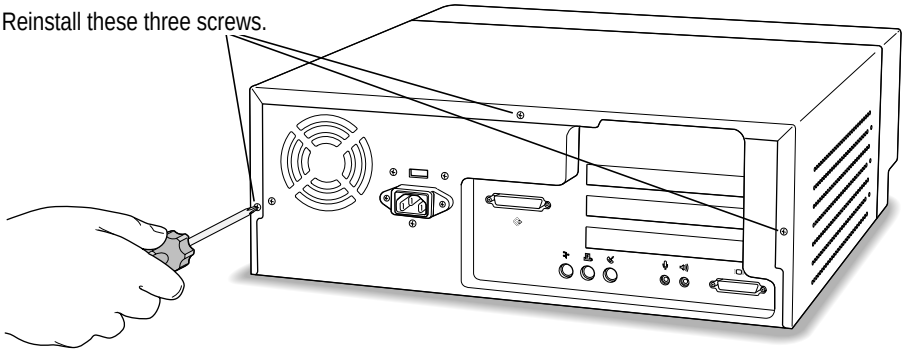
1 **Slip the base of the logic board into the guide rails inside the computer's case.**

Set the top cover down so there's about a quarter of an inch gap here. Then slide the top cover all the way forward.



2 **Reinsert the three cover screws you removed earlier.**

Reinstall these three screws.



3 **Plug the cables back into the computer.**

4 **Reconnect the power cord.**

Your computer is now ready to turn on and use.

WARNING Never turn on your computer unless all of its internal and external parts are in place. Operating the computer when it is open or missing parts can be dangerous, and can damage your computer.

Read this appendix for important health and safety instructions, as well as tips on keeping your computer in good working order.

Appendix A
Health, Safety, and Maintenance Tips

For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference by you and others.

Health-related information about computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer's keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We'll discuss each area of concern below.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

Eye fatigue

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest.

Arranging your office

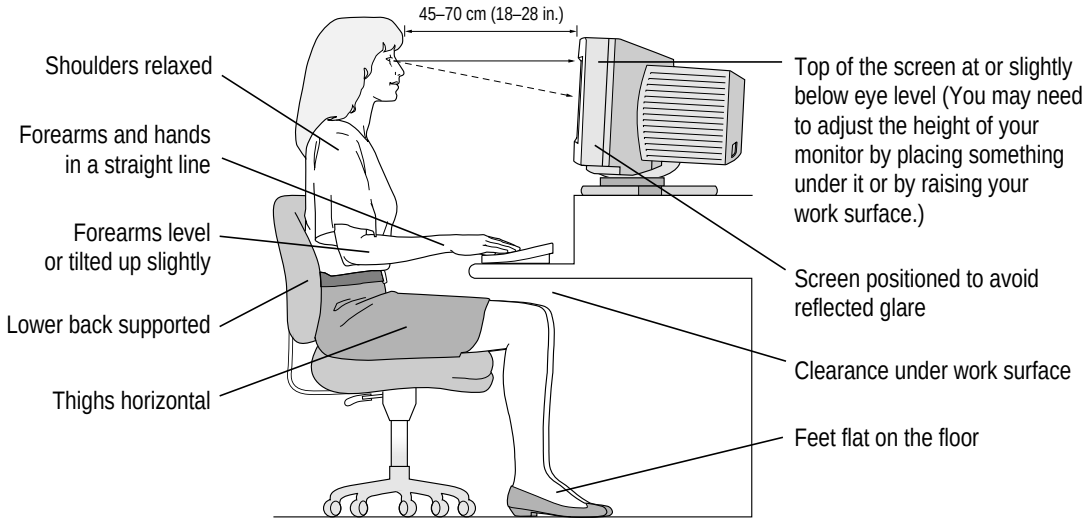
Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.

  The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).
- Position the computer to minimize glare and reflections on the screen from overhead lights and windows.



Avoiding fatigue

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

What about electromagnetic emissions?

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Safety instructions

For your own safety and that of your equipment, always take the following precautions.

Turn off the computer completely and disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exist:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh is exposed to rain or any other excess moisture
- your Macintosh has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh needs service or repair
- you want to clean the case (use only the recommended procedure described later in this chapter)

Be sure that you always do the following:

- Keep your Macintosh away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect your Macintosh from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your Macintosh into a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Handling your computer equipment

Follow these guidelines for handling your computer and its components:

- When setting up your computer, place components on a sturdy, flat surface, and carefully follow all setup instructions.
- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).
- Turn off your computer and all its components before connecting or disconnecting any cables to add or remove any component. Failure to do so could seriously damage your equipment.
- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.
- Take care not to spill any food or liquid on the computer, keyboard, mouse, or other components. If you do, turn your computer off immediately and unplug it before cleaning up the spill. Depending on what you spilled and how much of it got into your equipment, you may have to bring your equipment to an Apple-authorized service provider.
- Protect the computer and its components from direct sunlight and rain or other moisture.
- Keep all ventilation openings clear and unobstructed. Without proper air circulation, components can overheat, causing damage or unreliable operation.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Handling the monitor

Follow these procedures for handling a monitor:

- Turn down the screen brightness control if you leave the computer turned on for extended periods. If the brightness is not turned down, the image on the screen could “burn in” and damage the screen.

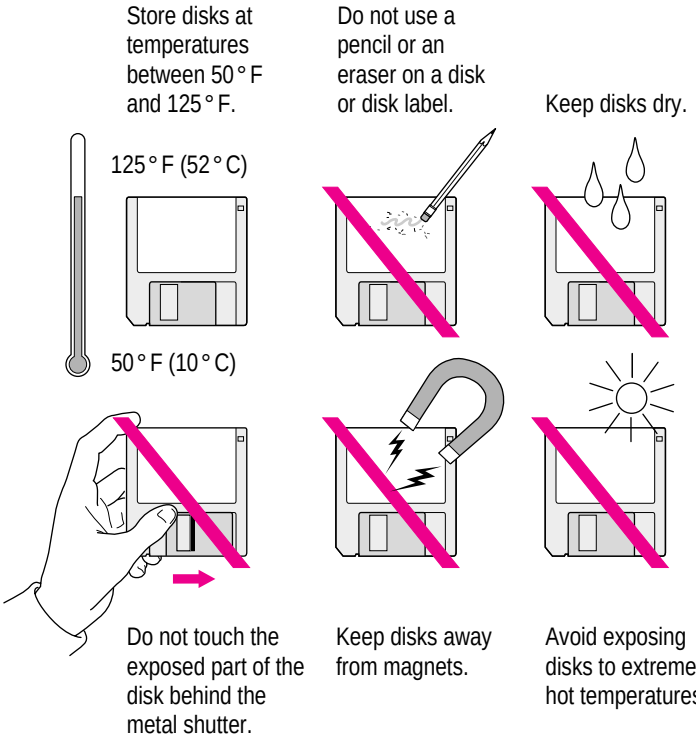
  You can also use a “screen saver” program, which dims or varies the image on the screen when the computer has been idle for a specified period of time. These programs are available from independent suppliers and user groups.
- Make sure the vents on the computer are clear and unobstructed.
- If there is interference on the monitor’s screen or on a television or radio near your computer, move the affected equipment farther away.

Handling the keyboard

Take care not to spill any liquid on the keyboard. If you do, turn off your computer immediately.

- If you spill liquid that is thin and clear, turn off your computer, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn’t work, take it to your Apple-authorized service provider for repair.
- If you spill liquid that is greasy, sweet, or sticky, unplug the keyboard and take it to your Apple-authorized service provider for repair.

Handling floppy disks

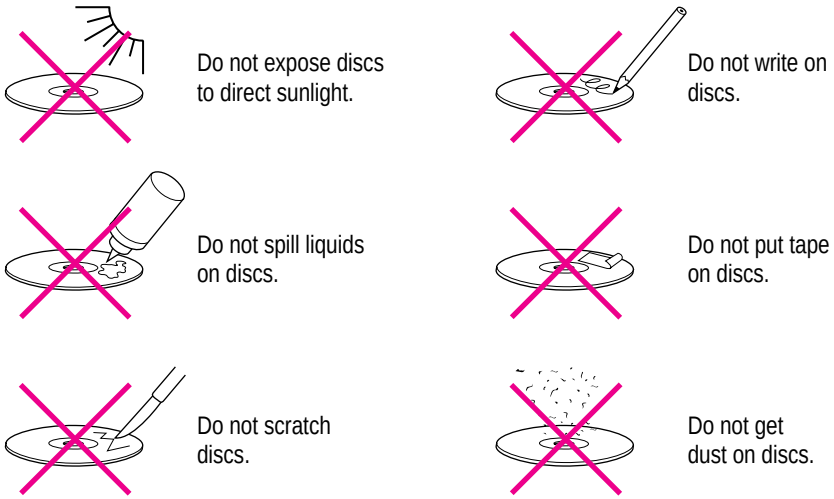


Handling CD-ROM discs

Keep these important safety instructions in mind as you use CD-ROM discs:

- Hold a disc by the edges or by one edge and the center hole. Do not touch the disc surface.
- To clean discs, wipe the shiny surface with a soft damp cloth, working in straight lines from center to edge. Do not use any form of cleaning agent.

- To avoid damage to your discs, keep these points in mind:



Other important safety instructions to keep in mind as you use your CD-ROM drive:

- Position your computer so that when the tray opens, it doesn't bump into anything.
- Do not leave the disc tray open. If dust gets on the lens of the CD-ROM drive, the drive may have problems reading your compact discs.
- Do not put anything (for instance, a cup) on top of the tray when it is open.
- Do not force the tray open by hand.
- Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple-authorized service provider for a lens cleaner.
- Never transport your computer with a disc inside the CD-ROM drive.
- Keep your computer equipment away from any source of liquid (such as wash basins, bathtubs, and shower stalls). If you drink coffee or other beverages while you're at your computer, take care not to spill.
- Avoid exposing your equipment to damp or wet weather. If your system is near a window, be sure the window is closed in rainy weather.

The tray on your CD-ROM drive automatically closes when you shut down your computer. You may want to open the tray and take out your CD-ROM disc before shutting down.

Power supply

The power supply in your computer is a high-voltage component and should not be opened for any reason, even when the computer is off. If the power supply needs service, contact your Apple-authorized dealer or service provider.

WARNING To protect the power supply from damage, make sure the voltage switch on the back of the computer is set correctly before you plug the computer into a power outlet. Refer to Chapter 1 for instructions on setting the voltage switch.

Cleaning your equipment

Follow these general rules when cleaning the outside of your computer and its components:

- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings.
- Don't use aerosol sprays, solvents, or abrasives.

Cleaning the computer case

To clean the case, do the following:

1. **Turn off the computer completely and then disconnect the power plug. (Pull the plug, not the cord.)**
2. **Wipe the surfaces lightly with a clean, soft cloth dampened with water.**

Cleaning the monitor

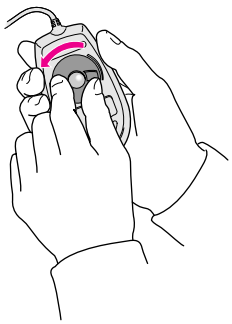
To clean the screen, put household glass cleaner on a soft cloth and wipe the screen.

Cleaning the mouse

The mouse contains a small ball that must roll smoothly for the mouse to work properly. You can keep this ball free of dirt and grease by using the mouse on a clean, lint-free surface and cleaning it occasionally.

You need a few cotton swabs and a clean, soft, lint-free cloth.

1. **Turn off your computer.**
2. **Turn the mouse upside-down and turn the plastic ring on the bottom counterclockwise to disengage it.**

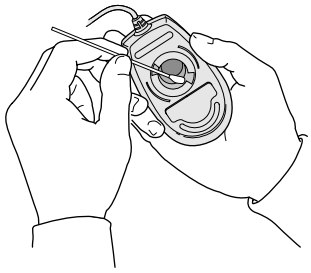


If the mouse is locked, see the next section, “Locking and Unlocking the Mouse,” for instructions on how to unlock it.

3. **Turn the mouse right-side up with one hand and catch the ring and the ball with your other hand.**

4 **Clean the three small rollers inside the mouse with a cotton swab moistened with water.**

Rotate the rollers to clean all around them.



5 **Wipe the mouse ball with a clean, soft, dry, and lint-free cloth.**

6 **If necessary, wash the mouse ball with warm soapy water (use a mild soap such as a dishwashing liquid) and then dry the mouse ball thoroughly.**

7 **Gently blow into the mouse case to remove any dust that has collected there.**

8 **Put the ball and the ring back in place.**

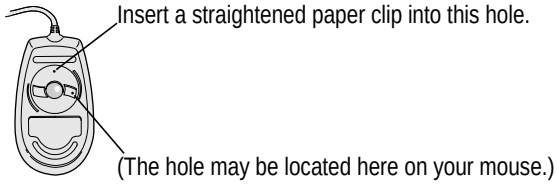
Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

Locking and unlocking the mouse

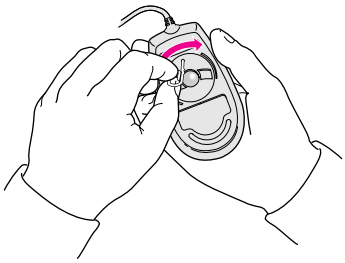
Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

To lock the mouse, follow these steps:

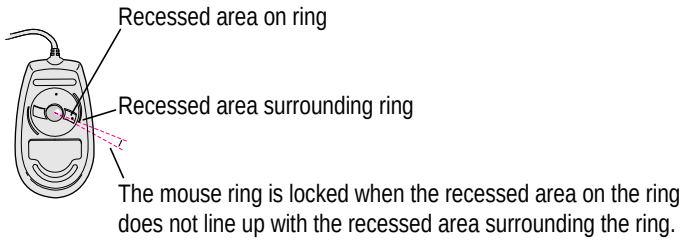
1 **Insert a straightened paper clip into the hole on the plastic ring.**



2 **Press down on the paper clip while you turn the ring clockwise.**

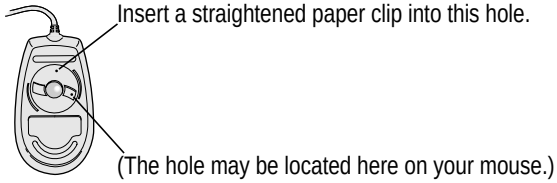


Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.

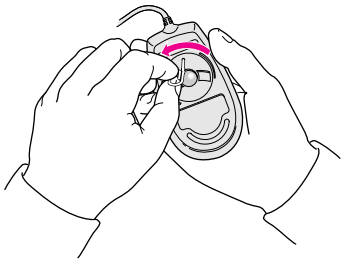


To unlock the mouse, follow these steps:

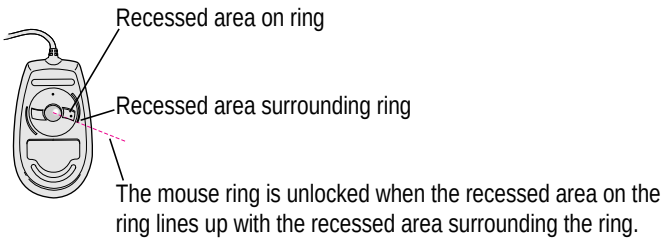
1 **Insert a straightened paper clip into the hole on the plastic ring.**



2 **Press down on the paper clip while you turn the ring counterclockwise.**



Turn the ring a very short distance. When the recessed area on the ring is lined up with the recessed area surrounding the ring, the mouse is unlocked.

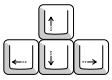


Read this appendix to learn how to use the special keys on your keyboard.

Appendix B
Special Keys on Your Keyboard

Your computer keyboard contains certain special keys that typewriter keyboards don't have. Many of these keys allow you to give commands to the computer without using the mouse. For example, in many application programs, pressing the ⌘ (Command) key at the same time as the Q key lets you quit a program.

The following table describes what you can do with the special keys on your keyboard. The special keys on your keyboard depend on the model of keyboard you have; some keyboards do not have all the keys listed.

Special keys on Apple keyboards		
Arrow keys		Use to move the insertion point, as an alternative to using the pointer. In some programs, the arrow keys have other functions.
Caps Lock key		Use to capitalize a series of letters (numbers and symbols aren't affected).
Clear key		Use to delete the current selection (or use the Delete key). In some programs, Clear has other functions.
⌘ (Command) key		Use in combination with other keys as an alternative to choosing a menu command.

continued ▶

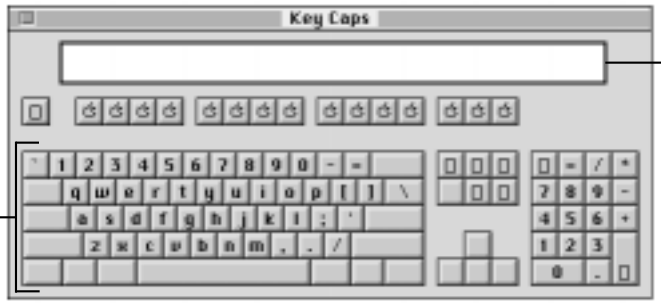
Special keys on Apple keyboards *(continued)*

Control key		In combination with other keys, this key provides shortcuts or modifies other actions.
Delete key		Use to delete selected material, or the character to the left of the insertion point.
Enter key		In a dialog box, pressing Enter is the same as clicking the outlined button. In some programs, pressing this key confirms information you have provided.
Escape key		The function of this key depends on the program you're using.
Function keys		Some programs allow you to use the 12 function keys to give commands. You can assign commands or action sequences to function keys with special utility programs.
Option key		Use in combination with other keys to produce special characters or modify actions.
Numeric keys		Use to produce numbers and mathematical symbols; some programs use these keys as function keys to initiate actions.
Power key		On some models, press to turn on the computer. Also press to shut down the computer on certain models.
Return key		Use to move the insertion point to the beginning of the next line. In a dialog box, pressing Return is the same as clicking the outlined button.
Shift key		Use to produce capital letters (or the upper character on the key).
Tab key		Use to move the insertion point to the next stopping place (such as a tab stop or field in a dialog box or program).
Other special keys		The function of these keys depends on the operating system and program you're using.

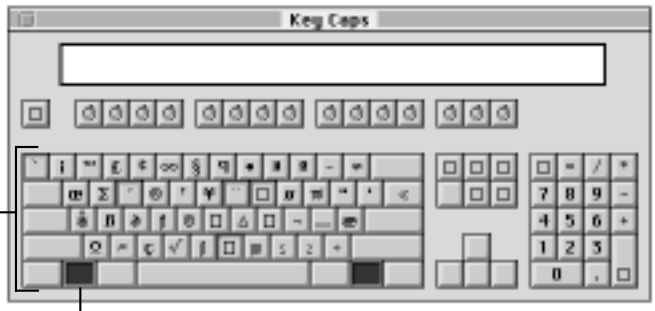
Typing special characters and symbols

You can type a variety of international and other special symbols and characters (including characters with diacritical marks, such as accents) by pressing combinations of keys.

The Key Caps program, which is installed with your system software, shows you the characters produced when you type certain keys and key combinations in the fonts available on your computer. Choose Key Caps from the Apple ( ) menu, then choose the font from the Key Caps menu.



To have Key Caps show more options for special characters, press each of these keys or key combinations: Option, Shift, Shift-Option, Shift-⌘, and Option-⌘.



If you press the Option key, Key Caps outlines lightly the keys that you can use in combination with letter keys to type letters with accents or other diacritical marks.

Note: If you see rectangles instead of diacritical marks on some of the pictures of keys in Key Caps, try pressing Option-⌘ to see the diacritical marks. However, use the Option key (not Option-⌘) in combination with the other keys to type letters with diacritical marks.

If you press the Option key at the same time as a key for a specific diacritical mark and then release both keys, Key Caps outlines in bold the keys for letters that can be typed with that mark. (You'll see that most key combinations for diacritical marks can be used with the Space bar as well as letter keys—producing the mark without a letter.)

The most common diacritical marks and how to create them are summarized next.

Diacritical mark	Key combination
Grave accent (`)	Option–`, then type the character
Acute accent (´)	Option–e, then type the character
Circumflex (^)	Option–i, then type the character
Tilde (~)	Option–n, then type the character
Umlaut (¨)	Option–u, then type the character
The letter "c" with a cedilla (ç)	Option–c

To type a letter or a space with a specific diacritical mark, press the Option key and the key for the mark simultaneously. Then type the letter that needs the mark.

If you are having trouble getting a mark and letter to appear together, try again. Be sure to press the Option key before (or at the same time as) the key for the mark; then, after you release both keys, type the letter to be marked.

Special key combinations

If difficulties with your mouse or computer don't allow you to use standard methods of quitting a program or restarting your computer, you can try using these special key combinations.

To do this ...	... press this key combination
Force a program to quit	⌘-Option-Esc
Force the computer to restart	⌘-Control–Power key
Start the computer from a CD-ROM disc	C key (at startup)
Ignore the selected startup device	⌘-Option-Shift-Delete
Turn off system extensions	Shift key (while starting up)
Start the Extensions Manager	Space bar (while starting up)
Rebuild the desktop	Option-⌘ (while starting up)

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Power Macintosh
User's Manual

Includes setup, troubleshooting, and important health-related information for Power Macintosh 4400 series computers

Apple Computer, Inc.

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Communications regulation information

FCC declaration of conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

Responsible party: Robert Steinfeld, Apple Computer, Inc., 1 Infinite Loop, Cupertino, CA 95014-2084, 408-974-2618.

Industry Canada statement

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI Class 2 statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づく第二種情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをしてください。

Laser information

WARNING Making adjustments or performing procedures other than those specified in your equipment's manual may result in hazardous exposure.

WARNING Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.

Class 1 label

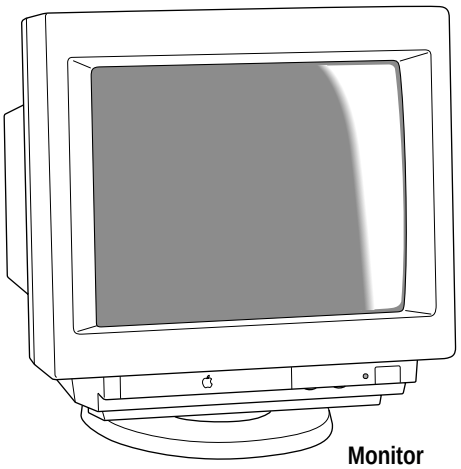
Service warning label

Welcome to Power Macintosh

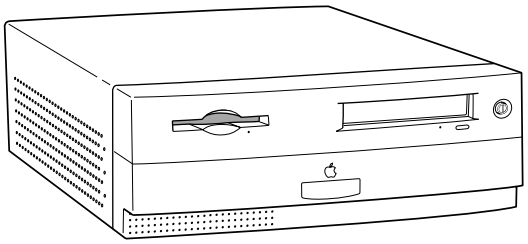
Congratulations on the purchase of your new Macintosh. Your computer is designed to give you the highest performance combined with real ease of use—it's easy to set up, easy to use, and easy to expand. This book will guide you through the setup procedure, tell you how to expand your Macintosh, and provide many tips on using your new system.

Your Macintosh computer is powered by the PowerPC™ microprocessor (or "chip"). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The PowerPC microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance at the lowest possible cost. The PowerPC RISC microprocessor represents the state of the art in microprocessor design.

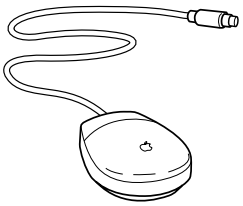
Your new Power Macintosh will run almost all of your existing Macintosh software, but for best performance and greatest speed, look for the new software programs designed especially for computers that contain the PowerPC microprocessor. You'll find PowerPC microprocessor–compatible programs at any software store that carries products for the Macintosh computer.



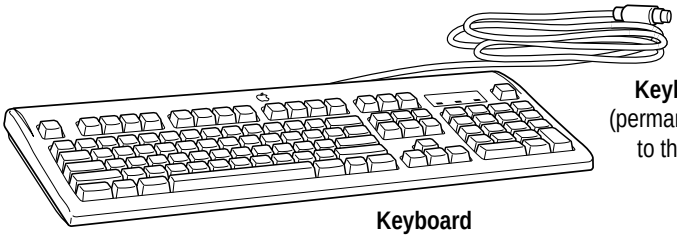
Monitor
(your monitor may look different)



Macintosh computer

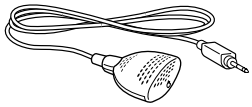


Mouse

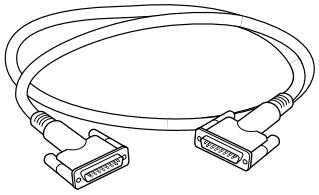


Keyboard cable
(permanently attached to the keyboard)

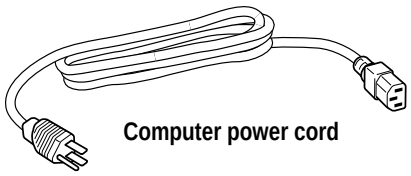
Keyboard



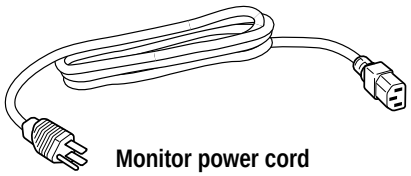
Apple PlainTalk Microphone (optional)



Monitor cable
(sometimes built into the monitor)



Computer power cord



Monitor power cord
(sometimes built into the monitor)